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Principles of Product Design
By Aaron Walter

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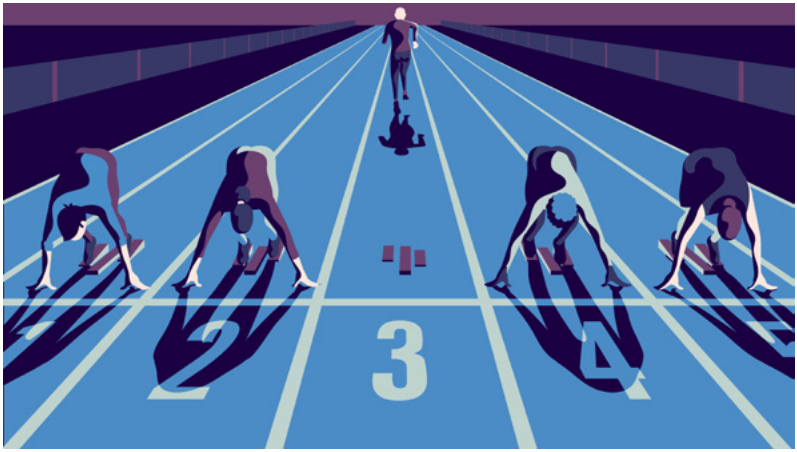


Chapter—01

Guess less

Stop wasting time

Have you ever bought a lottery ticket? I admit, I've played a few times. You won't be surprised to learn I never did win the big jackpot. Seeing winners on the evening news gives the false impression that anyone could win, but the odds of winning are long—very long.

Rod Wolfe knows a thing or 2 about long odds. His friends call him "Lightning Rod" because he's been struck by lightning not once, but twice. What are the chances? Well, you're more likely to be the next Rod Wolfe than you are the next lottery winner.

The software industry has a lot in common with the lottery. We see big winners in the news everyday—Facebook, Uber, Airbnb. Their success bolsters our ambitions of making the next big product. Our ambitions are big and we act fast hoping to beat competitors to the market.

Software success hinges on a lottery-like collection of variables: the right product with the right features for the right audience in the right market. If you're even a little bit off in your planning, you can end up wasting time and resources, and potentially put your company in a very difficult situation.

"The way we typically see startups working…

is that you come up with an idea, and then you engineer that idea, you launch that idea, and then you measure it… but that's broken in a few ways."

Daniel Burka — GOOGLE VENTURES

Optimistic that they already understand how to design a winning product and eager to get to market, many companies dive straight into production without spending time learning about customers and their needs. They base their designs on guesses that make the odds of success long.

If you're going to solve a problem, you want sufficient information to solve it.

Erika Hall — MULE DESIGN

"We're working on getting people to see research as a part of doing design well."

Guesses make messes

Buffer, a popular publishing platform for social networks, found itself in financial turmoil in part because they'd over-invested in products and features that weren't relevant to their customers.

We have a bias toward action at Buffer, and believe that moving fast and being bold are important. Optimism has seen us through a lot of mistakes at Buffer, like the countless new features and products we spent months building only to realize we need to scrap them. Content suggestions and our Daily iOS app are just a couple. But after a certain point in a company, the mistakes we make don't just affect the product features. They affect people's lives.

Joel Gascoigne — CEO AT BUFFER

Buffer had to let 10 employees go and made painful budget cuts to recover. The good news is they're starting to get back on track, but optimism and assumptions almost took them down. If you've spent time in the software industry you know Buffer's story isn't unique.

So many companies base their strategies on optimistic guesses and get it wrong far too often.

Guessing is expensive—if you're wrong you could be out of business.

Guessing puts you at a competitive disadvantage—when you know little about the customers you serve, you know little about how to succeed.

Guessing is arrogant—you're lying if you think you understand your customers without studying them first.

There's a way to tweak your odds of succeeding, though. Rather than making assumptions about customers, we can start to learn from them. Customer research is easy to do and can be folded into any workflow—Sprints, Agile, Lean, whatever! As you start to think about customer research, you'll

probably find you have a lot of data already on hand that can inform your work—you just need to bring it to the surface.

You win a race at the finish line, not the starting block.

Laura Martini — GOOGLE

"There is a fetishization of speed in Silicon Valley, without a real definition of what speed means."

Laura Marini — GOOGLE

Guessing makes your odds of success long. Let's stop playing the product design lottery and start getting the insights we need to make great products.

Here's how to do it.

Research fast and make things

Customer research fits into every workflow, every role, and every company size. Whether you're a designer, project manager, or director, the goal is to guess less and work from a position of being informed and confident.

> When designers don't know which problems to solve, we spin our wheels. We make products prettier when we could be solving customer's needs and generating real value. So any company that's serious about design should get equally serious about listening to customers.
>
> Braden Kowitz — GOOGLE VENTURES

There are 2 types of research you can do to learn about your customers:

- **Quantitative:** These are the things we can measure. Examples include analytics that communicate customer

behavioral patterns and aggregate stats about customer cohorts.

- **Qualitative:** These are things that tell us about the qualities of a product or experience. Customer interviews, for example, give us insights about how a customer feels, which can provide a lot of insight into what motivates their behavior.

Think of quantitative and qualitative research as the Wonder Twins. They each have incredible powers, but they're much more useful when they work together. Relying on 1 can sometimes lead you down the wrong path.

For instance, a couple years ago the user research team at MailChimp stumbled upon an interesting piece of quantitative data: many customers connected their Facebook accounts to their MailChimp accounts.

Based on the quantitative findings, the product team started to consider how to further the MailChimp-Facebook connection, but the qualitative findings from customer interviews told a different tale. Most customers only connected to Facebook because it seemed like something they should do given

the social network's popularity, *but they never actually did anything meaningful with the integration.* The product team changed course once the qualitative findings clarified the motivations behind the customer behavior.

PRO TIP — Quantitative and qualitative findings

Numbers give the illusion of certainty, but they can be misleading if not verified with qualitative findings.

Laura Martini, Google

Listen Online: Moving fast & finishing smart

Surveys that impact product design

Surveys are a handy way to learn about your customers and can be conducted ad hoc or even automated. There is a host of different surveys you could run, but use them sparingly, as too many will alienate customers.

There is an art to creating effective surveys, and the Google Ventures team has a wonderful guide that will help you avoid rookie mistakes as you begin this practice.

Tips for building effective surveys

- Start simple with clear goals about what you want to learn.

- Keep your surveys as short as possible to get better response rates. "Nice-to-know" questions should be cut, as they just increase the length of your survey.

- Never ask respondents for information you could get yourself. For example, don't ask when someone signed up for your service if you already have that info in your database.

- Randomize answers to question to avoid response order

bias.

- Conclude with an open-ended question like, “Is there anything else you want to tell us?” to give respondents an opportunity to surface interesting issues that may surprise you. This is a great way to find good candidates for interviews.

- Run a pilot test of your survey with a small sample of people before you send it to everyone. This will help you find questions that may be missing response options or identify places where things aren’t clear.

- Spend time carefully writing the email asking customers to take your survey, as it will greatly influence your response rate.

Erika Hall, Mule Design

Listen Online: Be honest about the kind of data you can collect with surveys

Automated surveys

Who they help: Everyone!

Why they're useful: After you set up an automated survey, data keeps streaming in, giving you fresh insights regularly.

PRO TIP — Data kung fu

Use a tool like Zapier to forward all survey responses into a shared Google Sheet, or even an Evernote account where your team can search through all responses.

Types of automated surveys you might send

- **Net Promoter Score:** Learn about your customers' loyalty to your brand. Delighted is a lovely tool to run regular NPS surveys.

- **After sign up:** Find out why customers signed up, and from which competitor they're switching. This is useful for marketing teams as it helps identify the language that motivates buying behavior. Send this within a few days of sign up while their memories are still fresh.

- **After account closing:** Find out why they're leaving. Is it you or just circumstance? Are they switching to a competitor? Link to your survey on the page in your app confirming their account is closed.

- **Topic specific:** Use a tool like Ethnio or Qualaroo to deliver a micro-survey to specific customers. By placing a small code snippet on a carefully selected page in your Knowledge Base, you can find a customer with expertise on almost any topic.

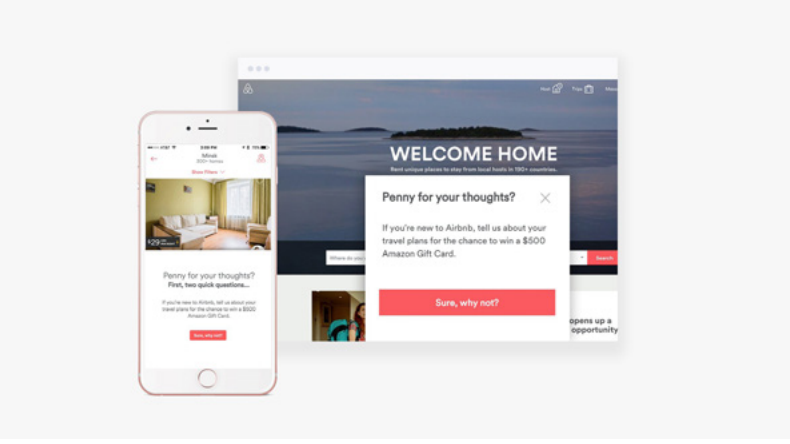


Figure 1: Airbnb uses Ethnio to learn about customers and identify the right ones to interview.

Ad hoc surveys

Who they help: Teams doing a deep dive on a feature or topic.

Why they're useful: They can give you an aggregate view of customers' thoughts on a topic, and help you find outliers who may make for good interviews.

PRO TIP — Smarter response filtering

Ask a question or 2 at the beginning of the survey to help you filter responses later. For example, a question like, “How old is your business?” or, “About how many people are in your organization?” can expose different responses from various customer cohorts.

Ad hoc surveys can be conducted in many ways. You can send an annual survey to collect customer data to inform projects throughout the year. You could also send a survey to gather insights or guide development on a specific feature or new product.

You needn’t survey all of your customers to get the results you need. Surveying too many people will produce lower response rates and introduce unwanted noise into your data. Instead, use your customer data to target the right people for your study before you send.

For example, want to learn more about customers who sell things online? Find a segment of those customers who have a shopping cart platform, like Shopify, integrated with your app. Want to hear from customers who are highly engaged with your product? Segment by ‘times logged in this month.’

Netflix, Airbnb, and Intuit have all used automated and ad hoc

surveys to inform their work.

Customer interviews

Customer interviews deliver a wealth of information that will help you design more successful products. They'll give you a glimpse into the emotions that drive customer behavior, help you understand your customers' workflows, and let you hear the language people use when describing your product. This is essential stuff!

PRO TIP — Finding your next product idea

Customer interviews are the best way to find the idea for your next product or the vision for the future version of your product. Getting a glimpse into the daily lives of your customers will show you where they struggle and the opportunities for designing products that will solve their problems.

But your time is limited and you probably can't spend weeks

talking to dozens of customers. How can you find the people with the most insight? The answer lies in your survey responses!

Your survey generated data from a variety of customers who can help you better understand how to design your product. Drop your survey response data into Excel and filter to find any of these types of customers:

- People nearby you can visit in person
- People who just signed up
- People who just closed their account
- People with interesting traits, behaviors, or off-the-wall responses
- People who've said they would or would not recommend your product to a friend

When you've found customers of interest, send them a short,

personal email asking to learn more about them. Interviews by Skype or Google Hangouts can be conducted in a conference room where your whole team can listen in—they'll comprehend the feedback more easily if they hear from the customer themselves. About 20-30 minutes is all that's needed for a phone interview. It's always a good idea to record interviews so you can reference them later.

Visiting customers in person takes a bit more time, but can be eye-opening. You'll get to see the hardware they use, the distractions of their office, the flow of their day, and meet some of their colleagues. The entire experience will be a vivid reminder to you and your team that you're designing products for real people.

Tips for conducting customer interviews

- Customer interviews needn't always be connected to a project. You can dedicate a day or 2 per month to talk to customers to keep your team in the habit of learning.

- Limit the number of people conducting the interview so you don't overwhelm your participant.

- Assign a person to take notes so the person asking questions is free to drive the conversation.

- Watch for signs of an energy change from the subject, raised voice, the use of profanity to punctuate a story, leaning in to emphasize a point—these indicate what's important to your customer, and directs you to ideas for refinement or even new products.

- Bring a voice recorder to capture the interview so you don't feel compelled to furiously capture every word.

- Each interview will yield 1 or 2 golden insights. Don't get lost in the details—train your ears to listen for the meaningful insights.

- Use the Switch Interview technique to learn from people who just bought or just left your product.

While at MailChimp, my team noticed a small trend of customers departing us for more complex and more expensive competitors. Using surveys, we recruited customers who

had just recently closed an account and cited a competitor's platform as the reason. We set up 60-minute calls with a handful, and spent 2 days interviewing.

The survey pointed us in the right direction, but the interviews provided the missing link: these customers weren't leaving because of the app's shortcomings; they were leaving because of a perception problem. They mistook the simplicity of the app for a lack of sophistication. These former customers were looking for a complex tool to make them feel like the accomplished professionals they are. It was eye-opening, and helped illuminate a new product direction for MailChimp.

Existing data

Sometimes guessing less simply means becoming aware of the data you already have. That's exactly what happened at Bambora, a new global payments company based in Stockholm. Creative Director Anders Färdigh and his design team craved more insight to guide their work, but the thought of building a dedicated research team felt premature. Maybe there was a simpler starting point?

During a meeting with their COO Patrik Göthlin, Anders discovered that much of the insight his team needed was already being gathered. Patrick's operations team was doing extensive Net Promoter Score research, surveying Bambora's customers to determine their loyalty to the brand, and following up with detractors to learn where they were falling short. They'd even been visiting customers in person to capture feedback about their products. There was so much information already on hand to help the design and product teams prioritize their work.

In large organizations, it's hard to know what research is already siloed within other teams. That's why it's important to spend time talking with colleagues on other teams to learn about their work and the research already underway.

Laura Martini, Medisas

Listen Online: Alternative techniques for gaining empathy

Get started by talking to people in these teams

- **Sales:** These folks talk with customers all day. They're collecting insights about product shortcomings and data about every potential customer. You may find that the data the sales team tracks in Salesforce could help you identify interesting customers to interview.

- **Marketing:** Analytics often falls to the marketing team to track. They can give you access to Google Analytics and other tools that may help you understand customer pathways and raise questions about interesting customer behaviors. Marketers are often at events talking with customers, and may have insights to share with you.

- **Customer service:** Few teams have as much actionable information for refining your product as the customer service team. They hear the struggles of your customer daily, and they know what themes are strongest. Make a habit of talking to many customer service agents to get the broadest perspective on your customers' pain points.

- **Data science:** Your customer database is a goldmine of information. If you have a data science team then chances are they're already querying that database to find

customer cohorts. This team will be your most treasured ally as you dig deeper into customer research.

- **Engineering:** You're probably already working closely with the engineering team on the product, but you should also be talking to them about the data they could be logging for you. Curious about which integrations customers connect first to your app, or failure rates of a particular workflow? Your engineering colleagues can probably log that data for you and have the app email you a report.

Learning in the background

There are a number of handy tools that can collect data for you behind the scenes, giving you yet another source of information to tap when you need it most.

Fullstory

Have you ever wished you could just watch your customers

using your product to see where they stumble? Fullstory gives you that super power. It's like a DVR for your app or website—it captures every session in your app and lets you play them back.

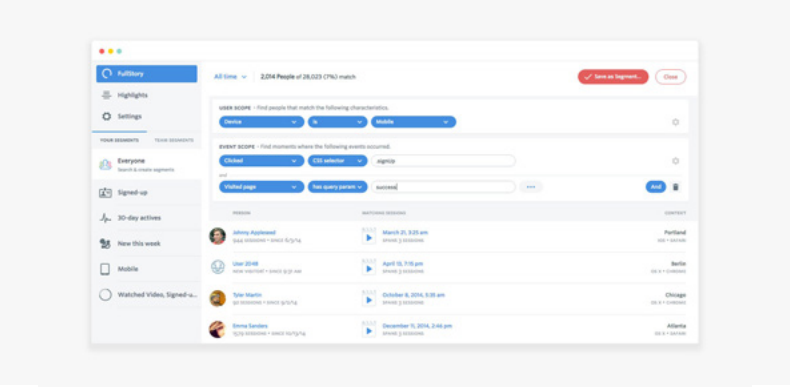


Figure 2. Fullstory is like a DVR for customer sessions in your app. It's a fast way to learn how you can improve your product.

Want to see sessions of every customer who's signed up in the past week and clicked the help button? Or maybe you want to see sessions where a specific error happened so you can diagnose the problem. Fullstory has incredible search options to help you filter sessions to find exactly what you're looking for.

Intercom

Intercom's customer feedback features can help you get in touch with customers who have taken specific actions, so you can then ask them about their experience. Once you've defined the rules for the customers you want to speak with, you can create automated messages to be sent via email or in-app. All of the feedback lands in a shared inbox, where your team can tag and organize messages to identify patterns.

Builtwith

You can learn a lot about your customers just by examining the tools they use, and Builtwith will help you discover every technology your customers use to power their website. When a new customer signs up for your product, pass their URL over to the Builtwith API to retrieve and store their tech stack data for your research.

Knowing that a customer is using Shopify, MailChimp, and Zendesk gives you clues about their business—they sell stuff online and have marketing and customer service teams; they're using tools that are very design focused; and they're using tools that are DIY, so they may not have developers on

staff.

As you look at the tech stacks of your customers you'll begin to read them like tea leaves, giving you clues that can guide you to the right interviews and aggregate data to understand customer cohorts.

Against all odds

You know why the lottery is fun despite being a losing game? There's not much at stake. I know the odds are wildly against me, but when I lose I'll only be out a few bucks. Rent will still get paid.

Product design also has tough odds, but the stakes are much higher. If your product fails to get traction with your customers, you and your colleagues could be out of a job.

"Fail fast" is the mantra of the software industry. The surest way to achieve that goal is by basing your product design on guesses. Successful, design-driven companies are doing just the opposite—they're *succeeding* fast by guessing less.

They're finding ways to inform their work each step of the way, tapping into existing data, setting up systems to continuously gather feedback, and they're talking to their customers all the time.

Research isn't some monolithic, academic process. It can fit into every workflow, every role, and every company size. Whether you're a designer, project manager, or director, the goal is to guess less and work from a position of strength by being informed.

Further reading

The Complete Beginner's Guide to Design Research

Minimum Viable Ethnography

Just Enough Research

Improve Your Startup's Surveys and Get Even Better Data

Survey Says...

Micro-surveys: a faster way to learn about your users

What fuels great design (and why most startups don't do it)

Jobs To Be Done

Usable yet Useless: Why Every Business Needs Product Discovery

Data-Driven Design Powered By An Annual Survey

Prepping Open Response Survey Data for Analysis

10 Ways UX Research Is Changing

Chapter—02

Story First

Find your North Star

Story is a profoundly important device to unite design teams around a shared product vision. This powerful communication tool helps us retain information and empathize with others. As companies scale and teams sprint through product iterations, it's easy to lose sight of how your product should fit into the lives of your customers. The best way to keep everyone pointed in the right direction is with a **clear, compelling story**—a story that will unite and guide teams towards success.

"I think what's most important is you have to have a North Star or vision set. If people don't have that, the mess builds up."

Stanley Wood — SPOTIFY

Product roadmaps guide team milestones, but they only show us what to build and when. They don't show us why we're building a product. Stories, however, are great at explaining why.

In *Start with Why*, author Simon Sinek proclaims, "People don't buy what you do; they buy why you do it. And what you do

simply proves what you believe." Similarly, the best product teams don't merely follow a process; they march toward a shared destination—a vision of the future presented as a story that answers, "Why are we building this?"

We've been using stories to answer big questions for thousands of years. Long before humans could write, we used stories to share our most important messages. Through story, Aborigines passed down their origin through thousands of generations, and ancient cave painters depicted the movements of the constellations and the magic of the spirit world. Story is a tried-and-true methodology for collective understanding.

We've been encoding information in stories for so long, our minds have evolved into story super-processors, easily plucking out important messages for long-term recall and helping us empathize with others. Jennifer Aaker, Professor of Marketing at the Stanford Graduate School of Business, has found "people remember information when it's weaved into narratives up to 22 times more than facts alone." Findings from a study published in the journal Science suggest that literary fiction "uniquely engages the psychological processes needed to gain access to characters' subjective experiences." In other words, we can more keenly empathize with others when we

learn about them through story.

Like thousands of stories told through the ages, product stories connect people and ideas. There are many ways to tell a product story, but they all start with a little planning.

Planning a product story

Product stories find their origins in research, not genius. Customer interviews will expose important moments of frustration, aspiration, and triumph—all of which are potential plot points in your story. Pixar uses a simple narrative structure to capture the essence of a story.

PRO TIP — A narrative framework from Pixar

Once upon a time there was _____. Every day_____. One day _____. Because of that, _____. Because of that, _____. Until finally _____.

Pixar's narrative shorthand makes it easy to flesh out a plot for

a product story, and makes plain why your product is important to build. For example, let's plug Airbnb's product into this framework:

Once upon a time *there was an artistic couple in Asheville, NC living in a charming home with a guest cottage out back.* ***Every day*** *they left each other and their lovely home to earn the money to help them pay their mortgage.* ***One day*** *they discovered a way to earn extra money by renting their guest cottage.* ***Because of that****, they were able to pay off their mortgage more quickly and save a bit extra for retirement.* ***Because of that****, they spent less time working and more time together.* ***Until finally*** *they were able to retire and live the life they'd dreamed of.*

Unlike design comps and prototypes, product stories aren't concerned with the UI of the product—just the people who will use it and in what context. A product story is very high level, answering a simple question: how will this product fit into the lives of others?

To answer this question, we can follow these principles

- A good product story demonstrates how a cast of

characters—your customers—behaves in specific settings.

- An effective product story shows how your product creates value in your customers' lives.

- An achievable product story takes place in the near future—freeing your team from the technical constraints of today. Show people the future that can be created if everyone works together.

- A product story is a visual explanation. It should be shared as a storyboard, a map, a comic, a series of illustrations, or a video.

Humans are visual thinkers. We often need to see something before we can comprehend it. Visuals will turn the abstract ideas of a product concept into a North Star that can guide teams to deliver on that vision.

A story map is not a mock up, it is a guide to make sure everyone is solving the same

problem, building the same product and pointing at the same piece of paper while making decisions.

James Buckhouse — SEQUOIA CAPITAL

One thing to keep in mind is that a product story shouldn't be overly prescriptive about how to realize that future. Every team involved—designers, developers, marketers, ops—will have to use their own domain expertise and judgment to deliver on their end of the work. The product story should inspire and inform but never dictate.

"The relationship between storytelling and design is that you need the story for people to understand how [the product] relates to them."

Kevin Cheng — INCREDIBLE LABS

Creating the product story

Product stories can take many forms: journey maps, storyboards, videos, even comics. Like any story, there's an element of entertainment required to generate excitement among your teams and stakeholders.

Crafting user journey maps

In The User's Journey, Donna Lichaw points out stories tend to follow a common structure. We're introduced to the characters, their goals, and the setting for the story in the exposition. Conflict ensues, rising to a climactic event, then the characters find a resolution to their problems. Pixar's narrative structure seen earlier follows a very similar story arc.

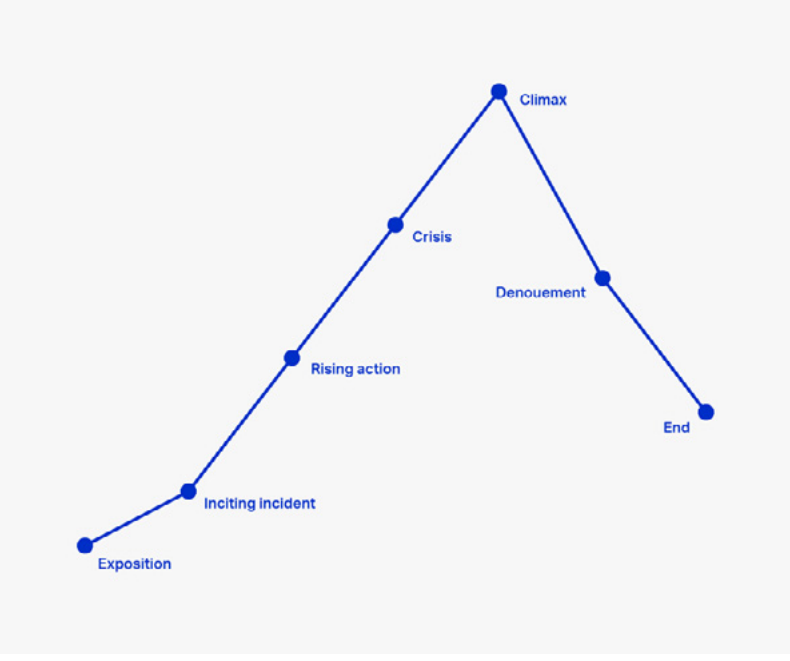


Figure 1. The common structure stories follow as explained by Donna Lichaw in her book The User's Journey.

Following this story structure we can create a user journey map—an exploration of the myriad ways in which users interact with your product or service over time and across different channels.

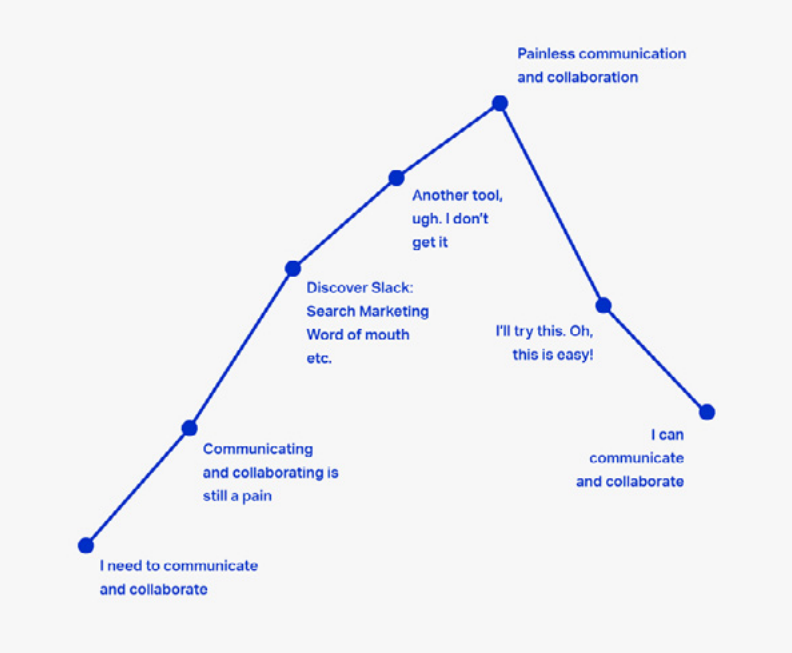


Figure 2. Donna Lichaw uses the story arc to depict the user's journey as she discovers and starts using Slack.

A user journey map can be done in many ways, but simple sketches like those presented in *The User's Journey* are particularly powerful as they're fast and more fun than formal documents.

Quick tips to build your user journey map

- Identify the main character's goals and the problems they

face.

- Be specific where possible. Quotes from customers and specific findings from research will give your user journey map details that will bring it to life.

- Point out the hurdles the user must overcome to get to the resolution they desire.

- Include the devices and channels of communication involved in the user's journey.

- Speech bubbles let you expose the customer's thoughts and words along the way.

- Use a whiteboard or big paper on a wall to work as a team.

- Your user journey map will reach more people if it's informative and fun.

“Everyone on the team draws comics, not just me”

Kevin Cheng — INCREDIBLE LABS

Storyboarding for product design

Storyboards—a collection of illustrated panels with short descriptions depicting key points in a story—are a tool often used by animation and film studios to work through narrative concepts. They were first developed at Walt Disney Studios during the production of Three Little Pigs in 1933.

Figure 3. Walt Disney and his team review a storyboard for their groundbreaking film Snow White and the Seven Dwarves.

However, storyboards have found their way into the product design process. According to Nate Blecharczyk, co-founder and CTO at Airbnb, the act of creating a storyboard was a "galvanizing event for the company." Brian Chesky, CEO of Airbnb, was inspired by how Disney Studios made a huge leap from short animations to their first full-length film, *Snow White and the Seven Dwarves*, using storyboarding to shape the narrative.

Airbnb's quick initial success portended a large opportunity for growth, but Chesky struggled to see where they might best invest the company's resources. Taking a cue from Disney, he

worked with the design team to produce a storyboard showing the story of their 2 types of customers: guests and a hosts.

> "We hired a Pixar storyboard artist to bring…the Airbnb experience to life."

Joe Gebbia — AIRBNB, FEATURED IN DESIGN DISRUPTORS

As Brian Chesky explains, "When you have to storyboard something, the more realistic it is, the more decisions you have to make." The act of drawing the frames of their storyboards forced the Airbnb team to consider the way their customers feel in each step of the process of renting or hosting.

Visualizing the experience puts you and your team there in the scene, building empathy with users as you strategize the design solutions. Airbnb's storyboard helped everyone in their rapidly growing company rally around a common cause to design the products that will best serve their customers.

Though Airbnb's storyboards are very high-fidelity, you don't need to hire Pixar-quality illustrators to produce your company's story.

Quick tips to build your product design storyboard

- Post sticky notes in a grid on a conference room wall and sketch out each scene with Sharpies. Stick figures will suffice, but if you want to refine your drawing skills a bit check out See What I Mean, Kevin Cheng's guide to drawing product stories. The act of thinking through the characters and the context of how your product will be used is the most important part of this process.

- Create photo storyboards using your phone. Get a few people together to act out the product experience, and snap photos of each step. Having a cheap wireless printer on hand will make it easy to produce a high-fidelity storyboard in just a couple of hours. Drop your photos into Keynote or PowerPoint to create a quick presentation that can be shared in meetings or emails.

- Online tools like Boards let you piece together a storyboard quickly and share with colleagues.

Video product stories

When the stakes are high and the timeline to completion is long, consider producing your product story as a video, which will help the people making a product connect with the customer experience.

Video transports us to new places and makes us feel like we're part of the story. Video's immersive qualities also make it good at forming long-term memories—yet another important advantage when mobilizing large teams toward a common cause.

Video is also easy to share. Once you upload your video to a service like Vimeo, your product vision will have a URL that can be dropped in an email or a Slack channel for all to view and reference.

One disadvantage to producing video product stories is the required time commitment: you'll need to write a script, gather some people to serve as your actors, and maybe rent some basic video equipment.

While preparing for a major app redesign, the UX team I led at MailChimp produced a vision video to guide the company on

what was to be a 4-month project. The research team noticed, after a number of customer visits, that people were doing work differently. Internet connections on phones and tablets let people work anywhere and all the time, ducking in and out of small tasks. This created a sense of found time quickly filled up with more to-dos. As people became overwhelmed with their work, they needed to hand things off to others. Seeing these behavioral patterns, we realized we needed to rethink how MailChimp handled collaboration across many devices.

The project required the collaboration of many teams. We wrote a short script and worked with our in-house videographer to produce a brief vision video in about 10 days.

"The next morning, she continues working on her campaign on the way to work."

Faced with a major redesign of their platform, MailChimp created this vision video to guide all teams.

The production was inexpensive and relatively fast, but the outcome was of high enough fidelity to guide designers, developers, marketers, and other stakeholders around the

company as they worked to realize the vision set forth.

Quick tips to build your video

- Determine if the scope of the project warrants a video. New products, long projects, and cross-channel experiences are well served by video product stories.

- Plan ahead—video shoots can take a bit more time.

- Avoid specifics like a detailed UI—focus on how the product needs to fit into the lives of your customers, not how the product looks.

- Keep things simple. Enlist colleagues and friends to act out the parts. Use a DSLR camera to shoot and simple editing software like iMovie to produce your video.

- Skip the dialogue to speed up video production. Use speech bubble overlays instead.

Product story offshoots

Stories are always better with well developed characters. User personas and job stories can help you transform findings about customers into clear portraits of the people you're designing for and their behavioral motivations.

User personas

User Personas are archetypal representations of key customer segments. They give a name and a face to otherwise abstract customer data, inspiring empathy and informing design.

Personas can take many forms, from documents to posters, but they're most effective when visible. The MailChimp UX team created a series of persona posters to guide their product. While pulling a shot from the espresso machine or lunching in the common space, the persona posters reminded everyone in the company of the people using their product.

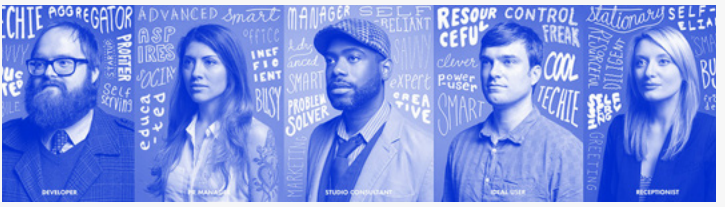


Figure 3. MailChimp's user persona posters reminded all teams of the people using their product.

Quick tips for creating user personas

- Line up interviews with customers in each key segment.
- Analyze the findings from your interviews to determine common traits and goals within each customer segment.
- Create a profile representative of the largest common groupings.
- Refresh often, as personas are merely a snapshot in time and not built to last.

Job stories

Job stories come from the Jobs to Be Done framework developed by Clay Christensen, Harvard Business School professor and author of the influential book The Innovator's Dilemma. Core to Christensen's Jobs to Be Done theory is that we don't buy products, we hire them to do a job. By discerning the job a product is hired to do, we can better understand the motivations of customers.

Job stories are based on customer interviews that employ a very specific technique that takes the customer back to the moment of purchase to expose the situations and motivations that lead to their decision.

> Job stories can only come from real customer interviews. Before designing a feature or new product, you must talk to real people and uncover all the anxieties and contexts which were in play when they used your or a competitor's product.
>
> Alan Klement — PRODUCT DESIGNER

Job stories and user personas are very different. Personas represent specific segments of customers that have a shared set of characteristics, skills, and perspectives. Job stories are only concerned with a customer's motivations within a specific context.

A job story follows a simple structure:

PRO TIP — A job story framework

When _____ I want to _____ so I can _____.

Breaking down the job story

Each section of the job story reveals a specific piece of information:

- Situation: When _____
- Motivation: I want to _____

- Expected outcome: so I can _____.

For instance:

When I commute to and from work for hours each day in my car **I want to** do something productive and stimulating **so I can** feel like I'm not wasting time and actually make my commute productive.

A job story like this provides rich insight into the problem to be solved: this commuting time is ripe for the right product or service to make wasted time instead feel like a newfound opportunity.

Quick tips to create your job story

- Interview customers following the Jobs To Be Done interview process

- Identify the situation, motivations, and desired outcomes related to the customer's purchase

- Create a job story for each customer interview

- Compare job stories for each interview to find patterns

"We can start with a story…in everything we do"

Liz Danzico — NPR & SVA

Fitting into the lives of others

The storytelling mechanism you choose is less important than the story you tell. The act of **creating a product story before you begin the design process** not only helps you mobilize your teams, it also forces you to clarify your intentions for your product. You'll step out of the maker's mindset and consider how your product will fit into the lives of others.

Peering through the microscope at the details and execution of a project is important, but only after we've gotten the perspective from the Earth to our North Star, getting a glimpse at the future we can create. Story First is a simple principle to help you and your whole company work together on big ideas.

Daniel Burka, Google Ventures

Listen Online: Design Sprints and story

Further reading

The 8 Steps to Creating A Great Storyboard

Design's North Star

Why We Need Storytellers at the Heart of Product Development

Improving UX With Pixar's 22 Rules of Storytelling

See What I Mean by Kevin Cheng

The User's Journey by Donna Lichaw

The Literary Darwinists: The Evolutionary Origins of Storytelling

How Snow White Helped Airbnb's Mobile Mission

The Psychological Comforts of Storytelling

Story Map

Replacing the User Story With the Job Story

5 Tips for Writing a Job Story

The Jobs to Be Done Handbook by Bob Moesta and Chris Spiek

Agile is Reducing the Value of Your Design Team

Chapter—03

Pencils before pixels

Think divergently

The work of the modern designer lives in the abstract world of the computer, where every move we make is precise and effortless. Precision has its place, but not in the early stages of the creative process, when our ideas are still nebulous. There's danger when creative exploration starts with perfection.

Perfection can create the illusion of certainty, something architect Frank Gehry avoids as he begins a project. It's discovery he craves. Craig Webb, Design Partner at Gehry Partners, has heard Gehry say many times, "If I knew where I was going, I wouldn't go there." To Gehry, peak creativity lies in the unknown.

His process begins with rough concepts. He and his team sketch, make models, then reflect. If the outcome isn't right, they throw it out to begin again. Crude outputs early on make the work less precious and completely malleable.

> "I've worked out my language through the sketches and through the models."
>
> Frank Gehry — GEHRY PARTNERS

The hundreds of models and sketches that cover the walls and surfaces of Frank Gehry's studio are the artifacts of a creative process that starts wide, where there's space for discovery of the best ideas before committing to a single direction.

Figure 1. Frank Gehry's studio is an explosion of sketches and models, artifacts of a creative process that values discovery.

Though Gehry's work is unique, his process is not. Many creative thinkers start wide and narrow down. Unfortunately, many software design teams take a different approach—they start narrow and refine too soon.

Steve Jobs once famously likened the computer to a bicycle for the human mind. Computers help us make short work of complicated tasks and connect us to vast amounts of data—superpowers indeed, but when misapplied they can hinder the

creative process.

Computers let us jump straight to pixels—a space of precision where everything aligns to a grid, vividly colored and fully formed. Precise outputs are precious and hard to abandon. This narrows creative exploration to just a few ideas well rendered.

To find the best design solutions, we should follow Frank Gehry's lead: crudely render *many* ideas to find the solution worthy of a more precise investigation.

We can make more space in our creative process for critical thinking and better design by putting pencils before pixels.

> "Sketching is extremely powerful because it is incredible fluid"
>
> Kevin Cheng — INCREDIBLE LABS

The power of a pencil

The pencil is a humble tool that's sparked millions of great ideas. It's the inverse of a computer; it's simple and limited in functionality, but its limitations make it effective.

> I start everything important with pencil and paper.
>
> Russ Unger — 18F

Pencils are important to the creative process because:

01. *Pencils are inclusive*. They're not just for designers—anyone can use a pencil to express their ideas clearly. The pencil is the great equalizer.

02. *Pencils are low-fi.* Quick sketches give no impression of a complete thought, signaling to all that it's okay to offer feedback.

03. *Pencils aren't fiddly*. Instead of getting lost in software settings or style, you'll focus on your ideas.

04. *Pencils are fast*. You can explore vastly different solutions

> to the same problem in minutes, and you won't feel bad throwing your sketches out because you invested so little time.

There's a magic that happens when we put our ideas on paper. Dave Gray, Founder of XPLANE and co-author of Gamestorming, describes sketching as "a conversation with yourself." Gabriela Goldschmidt, professor emeritus at Technion Israel Institute of Technology, made similar observations in a study of the sketching practices of architects published in the Creativity Research Journal. She discovered that although sketches start from ideas already within the mind, they can mutate into the unexpected—forming new ideas. Sketching is a thinking activity!

PRO TIP — Gamestorming together

The bestselling book Gamestorming: A Playbook for Innovators, Rulebreakers, and Changemakers by Dave Gray, Sunni Brown, and James Macanufo includes more than 80 games—many of which involve sketching—to help you get your whole team working together to generate new ideas.

Many product designers already know this intuitively. Stanley Wood, Design Director at Spotify, told us, "Many of our designers sketch, but just so they can think through various ideas. Most of the time they don't show them to anyone."

And sketching, of course, is also a powerful communication device. The design team at Slack shares sketches with colleagues to invite conversation about concepts without getting distracted by style.

> We all start on paper at Slack and then explore from there. It's rare that people are so good with a tool that they can think within it. Having squiggly lines on paper keeps you focused on real problems. You can move through ideas much faster, and there's also something about the fact that a sketch is so clearly not the final product. People don't get confused by the style and instead focus on the concept.
>
> Diogenes Brito — SLACK

Diógenes Brito, Slack

Listen Online: Pencils before pixels

The MailChimp design team discovered that sketching is an important bridge to engineering colleagues. Todd Dominey, MailChimp's Director of Design, noticed that "Pixels freak people out!" When engineers see a high fidelity design comp, they get the impression that the important decisions have been made without them, and now they're expected to simply execute the design. But when a sketch is presented, it's clear that the creative process is still wide open for their participation.

The Lullabot design team starts all of their projects with rough sketches on paper—even this project, a mobile app for The Grammy Awards.

No art degree required

Depending on your background, the term “sketch” might conjure images of an artist in a Parisian cafe, leisurely capturing a scene with loose lines and precise shading. But you don’t need a beret or an art degree to sketch a quick UI or communicate an idea for a product (a cappuccino won’t hurt, though). If you can scribble some text and draw boxes, you’ve got all the skills you need to sketch.

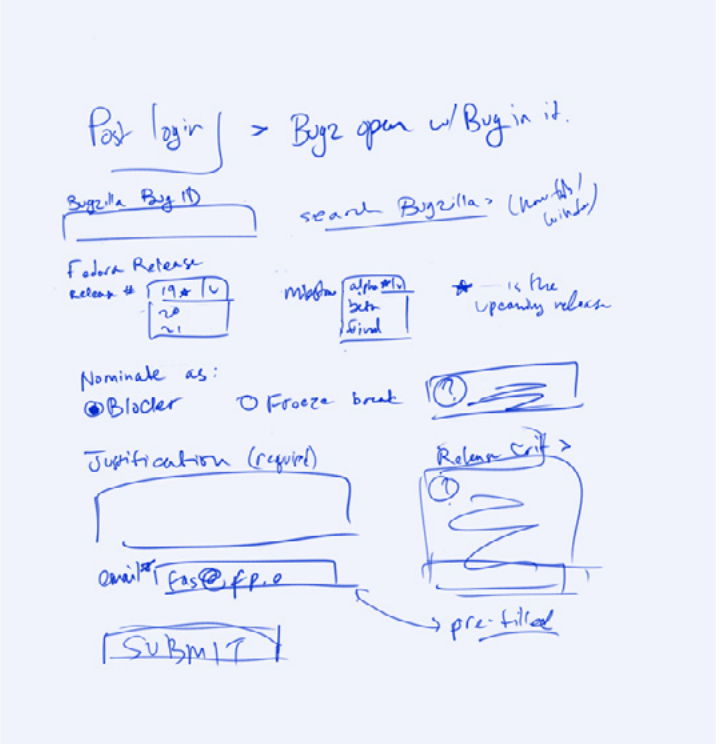


Figure 2. A quick, ugly sketch still has the power to communicate an idea or help you discover new ideas.

Sketching is something anyone can do—it's not the sacred territory of designers. Inviting others to participate in the design process will help you produce a more diverse set of design solutions. Engineers, product managers, executives, lawyers—anyone with a stake in your product—can help you

turn abstract ideas into concrete solutions by sketching.

> Sketching lets everyone participate. Business stakeholders can contribute to sketches, as can developers. This gives people beyond the design team buy-in on the final product.
>
> Fred Beecher — THE NERDERY

PRO TIP — How to trick someone into sketching their idea

Have you ever had someone try to describe an idea so abstract that you just can't see it? You ask them to sketch it and they respond, "Oh, I can't draw" No matter how you reassure them, they won't risk looking a fool by making a simple sketch. Dennis Kardys, Design Director at WSOL, has heard this from many a client and has a simple trick to get people over their fear of drawing. Dennis begins to draw his client's idea for them but intentionally gets it wrong. "Is this what you mean?" he asks. The client tries to explain it once more, and again Dennis draws it the wrong way. Finally, frustration drives the client to snatch the pencil from his hand and draw it themselves. "Oh! I

see!" Dennis responds. With the ice broken, Dennis finds that clients will let go of their reservations and continue to sketch additional ideas. For most people, sketching doesn't come naturally. You'll need an activity to spark creative thinking and get colleagues comfortable with exploring ideas on paper.

Sketching ideas together

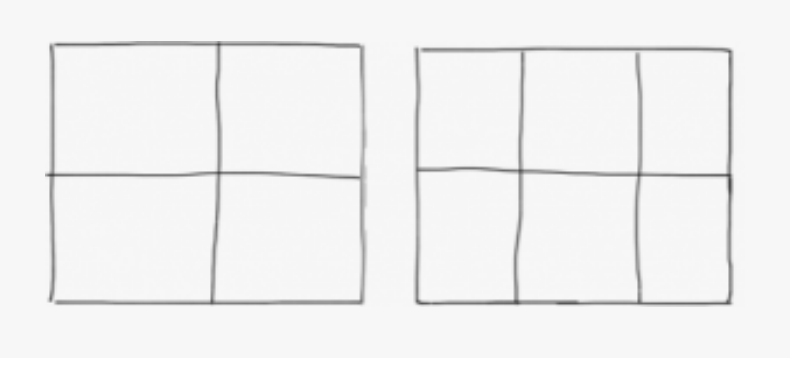
A simple activity with tight constraints can be the catalyst you need to get your team comfortable. Todd Zaki Warfel, Senior Director of Design at Workday, created a team sketching activity called 6-8-5: you and your colleagues will generate 6 to 8 design solutions per person in just 5 minutes. No one will have enough time to get lost in fancy renderings, and that's important. After all, the idea is to focus on ideas and ditch misgivings that "I can't draw!" In this exercise, everyone's sketches will be messy!

Here's how it works

01. Get your team together—designers, engineers, product managers, and experts with important domain knowledge.

Limit the group to 8 or less to keep the discussion productive.

02. Give each person a sheet of A5 or 8.5" x 11" paper. The paper will be folded 3 times to create 6 boxes (for 6 sketches). If you want to generate more ideas, fold the paper into quarters and give everyone 2 sheets.



03. Frame the problem for everyone, and clearly state the desired outcomes of this project. "We want to help customers become active in this app more quickly. How might we achieve that?"

04. Set a timer for 5 minutes, and instruct everyone to sketch solutions individually (and silently, to help everyone focus).

05. When the timer goes off, it's time for each team member to present his or her ideas. Conversation about each idea is important here. Critical feedback will help you see what ideas are best. Every team member should be given the opportunity to share sketches.

If time permits, you can do additional rounds to go deeper into each idea. Working together to solve problems gives everyone shared ownership in the product vision and generates great results because so many diverse perspectives are present.

> Sketching is a big part of our process. We get everyone together to sketch so we have shared ownership and vision.
>
> Aaron Irizarry — NASDAQ

You might be wondering why everyone's sketching separately in this exercise instead of together on a whiteboard. According to repeated studies on group brainstorming work, we produce fewer ideas and of lesser quality when we work in groups. Keith Sawyer, a psychologist at Washington University, has summarized the science: "Decades of research have

consistently shown that brainstorming groups think of far fewer ideas than the same number of people who work alone and later pool their ideas."

Remember, early in the creative process we're best served by covering as much territory as we can instead of going deep on 1 or 2 ideas.

The right tools at the right time

The tools you use to sketch can influence how fast and far your creative explorations proceed. With fine line pens and mechanical pencils, you'll be prone to create detailed sketches, which are slower. To avoid slipping into detail early on, Jason Fried, co-founder of Basecamp, uses fat markers for sketching on large format graph paper. With fat markers, it's pretty hard to draw a detailed UI. Instead, you have to focus on the workflow and how people will use your product.

Dave Gray, founder of XPLANE, speaks with Jason Fried of Basecamp about how he

explores ideas through sketching.

As ideas are refined, a medium Sharpie or—my favorite—a Staedtler Triplus Fineliner can help you explore your ideas with more precision. Loose paper works best for sketches, as they can be shared, posted on the walls, or mercifully recycled rather than lingering for posterity in your sketchbook. Designers who sketch UI concepts in detail find Copic gray markers add depth and clarity to sketches.

Sketching with remote teams

Team sketching is an important part of the creative process at Lullabot, a creative agency that serves clients like SpaceX, The Grammys, GE, and Martha Stewart. Each new project they take on starts with a sketching session, but not of the sort described above—this design team is entirely remote.

Creative Director Jared Ponchot has devised a simple and inexpensive way to sketch as a team despite the distance that separates them. He bought each designer a simple USB document camera, the IPEVO. At just $60 each, Jared

even buys the cameras for engineers, clients, and other key collaborators in the company so they can participate in early sketching sessions.

Figure 3. The IPEVO camera is perfect for sharing sketches with a remote design team.

Like many remote teams, Lullabot runs their meetings via

Google Hangouts. In their meetings, they share sketches by simply switching the camera source to the IPEVO. Each team member can walk others through their ideas, or sketch live to explain a new concept.

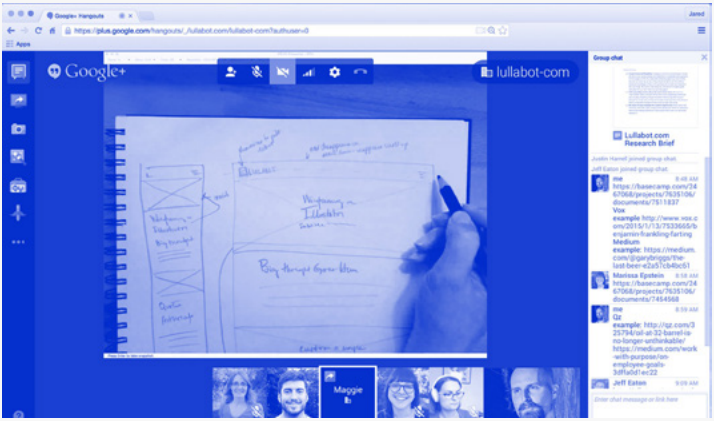


Figure 4. Lullabot creative director Jared Ponchot sketches with his remote design team.

Figure 5. The IPEVO cam can be used in a Google Hangout to show sketches with a remote team.

Ponchot's solution is simple and effective. It keeps his team focused on a breadth of design solutions early in a project instead of jumping straight to pixels, where they would get lost in execution.

Related: Freehand–a fast, flexible new way to collaborate in real time

Ideas before execution

Sketching before we jump to the computer has many benefits, the greatest of which is that sketching keeps us laser-focused on *ideas* instead of the charms of design *execution*. Design is often described as the act of solving problems for others. We cannot live up to that mandate if polish eclipses exploration in our creative process.

> Throughout my career, whenever I start at a lower fidelity it opens the door for more participation from others and makes me focus on identifying the core concerns. I always advocate exhausting exploration/discovery at the lowest possible fidelity and only when you can't reasonably make progress, going to the next level.
>
> Josh Brewer — ABSTRACT

Putting pencils before pixels can help you bring others into the design process and win you allies. Gaining the broad perspectives of your colleagues early on will also help your team produce better design solutions.

Here's your to-do list to put pencils before pixels into practice

- Generate dozens of ideas on paper before designing on the computer; sketching is a thought process that will help you discover the unexpected.

- Get engineers, product managers, and other key stakeholders to sketch with your team in the early phases of a project. This will clarify the project for all, and create a sense of shared ownership.

- If your team or clients are remote, use USB cams to share sketches and ideate as a team.

- Constraints like fat markers or time limits on sketching can help you avoid getting lost in detail too soon.

"[Sketching removes] all barriers to getting ideas out into the world."

Liz Danzico — NPR & SVA

Further reading

Sketching the User Experience

Drawing Ideas: A Hand-Drawn Approach for Better Design

The Doodle Revolution: Unlock the Power to Think Differently

Gamestorming: A Playbook for Innovators, Rulebreakers, and Changemakers

Draw Toast: Solving Wicked Problems by Sketching

The Messy Art Of UX Sketching

The product design sprint: diverge

Sketch, Sketch, Sketch

164 Ideas in 5 Hours of Remote Sketching

Sketching Software

Designing Together Apart

Sketchboarding: Discover Better Faster UX Solutions

Chapter—04

Show and tell

Create a culture of feedback

Feedback is the lifeblood of a healthy design team. It informs the design process, leads to better products, and helps designers grow. Despite its essential role in design, it's too often absent in our work.

In most design programs, feedback is folded into virtually every aspect of learning. I was reminded of this fact a couple years ago when I was invited to the Stanford d.school to speak to Enrique Allen's class about design. Before meeting with students, Enrique provided a quick tour, pointing out works in progress. His colleague Scott Doorley joined us to explain the thinking behind each workspace in the school.

Figure 1. The Stanford d.school was very carefully designed to facilitate the chaos of creative thinking.

In some ways the school was like many others I'd visited—the energy of overly caffeinated students laboring over projects was palpable. But there was something peculiar about it: every space was messy. Not unkempt, but messy with ideas in progress. There was a sense of urgency to the way work was posted on walls and scribbled upon. Work tables were strewn with exacto knives, rulers, tape and scraps of paper—instruments of creation. All the furniture—desks, couches, work tables, and whiteboards—was fitted with casters and either pushed into clusters for conversation or lined up against the walls to open up room to build. The space was very carefully designed to facilitate the chaos of creative thinking.

The energy was incredible, and I didn't want to leave. It was an ecosystem of ideas, where projects sprouted and grew or died to make room for the next experiment.

The d.school's design studio is so different from those in nearly every tech company, where the space is pristinely decorated and filled with desks for solitary work. The walls of most startups I've visited are reserved for clever posters or artsy murals, not the design concepts that will lead to the next product release. Those designs remain trapped in a legion of MacBooks, starved for critical discourse that could help them grow into something far greater.

Consciously or not, we feel and internalize what the space tells us about how to work. When you walk into most offices, the space tells you that it's meant for a group of people to work alone.

David Kelley — STANFORD D.SCHOOL, IDEO

Healthy feedback

Something's lost when we transition into the professional design world. Work no longer happens out in the open. Creative chaos is traded in for tidy presentations of fully formed ideas. Things stop being messy.

The d.school's messy studio is an indicator of a healthy feedback process. Students are making things, showing what they've made, and getting feedback that helps them see their work differently. Then the process repeats, often quickly.

Healthy design teams have feedback built into their processes, so ideas can evolve and designers can grow. Work is shared with colleagues consistently and intentionally in design

reviews, daily standups, and casual conversations.

Building feedback into our design practice helps in so many ways:

- It helps us avoid spending too much time on a design that may have significant flaws.

- It gives us multiple perspectives on a single problem, helping the designer get closer to an effective solution faster.

- Presenting work for feedback keeps the team synced on project progress, and holds everyone accountable to milestones and deadlines.

- As designers get in the habit of presenting their work and giving feedback to others, they learn to think more clearly about their design decisions and become comfortable articulating their ideas.

- Regular feedback processes will give junior designers the

opportunity to learn from senior designers, helping your entire team level up.

There are many ways to create a culture of feedback in your team, but be patient—change won't happen overnight.

Related: E-course: Making a product designer

Creating a culture of feedback

Giving and receiving feedback is a skill that needs to be cultivated. Dropping a few design reviews on the team calendar creates the opportunity for your team to exchange feedback, but it doesn't ensure that anyone will actually know how to participate.

It can be a little scary to give feedback—we don't want to create conflict by coming across as negative. And receiving feedback is even more intimidating. No one wants their work to be criticized! With practice, your team will learn that these fears are misplaced. Design feedback, when properly delivered, is constructive, supportive, and helps designers

grow.

> Psychological safety, in an organizational sense, is the feeling that it's ok to take risks and be vulnerable in front of each other.
>
> Mike Davidson — FORMERLY TWITTER

As they talk about design, your team will develop the language they need to deliver constructive feedback, and their perspectives on the qualities of good design will mature. You'll hear fewer vague observations and more constructive feedback that can improve the design. For instance, rather than hearing, "I like the type you've chosen," you'll begin to notice statements like, "The type selection feels trendy, which contradicts the project's goal of inspiring trust in the content." The former isn't helpful, while the latter is instructive.

Tweaking the language used in critiques can help ensure designers don't take criticism personally. Say "**the design** doesn't meet the goals of the project," not "**you** didn't meet the goals of the project." Always talk about the work, not the person who made it.

Figure 2. The design team at Buzzfeed discussing new design concepts.

Good feedback develops with rapport. For that reason, you may want to temper overly critical feedback early on so people feel safe presenting their work. Designers need to hear where they're headed in the wrong direction, but deliver the message with encouragement. Work your way into more direct criticism once rapport and trust are established.

Setting the stage

Feedback happens more naturally when you create the right environment. Does your design practice make affordances for creative chaos like the Stanford d.school does, or is it built for solitary work?

By simply changing your space, you can set the stage for feedback and collaboration in your team. For distributed and remote teams, this is doubly important. Establishing dedicated times and places for sharing works in progress keeps everyone connected.

In person

The walls of your design studio are a sacred space. This is where your team's ideas can be shared, debated, retooled, and celebrated. Make it clear to your team that the studio walls are not a gallery—this is work space!

If you don't already have one, invest in a large format printer and get the whole team connected. Print design work daily and post to your studio walls for scheduled design reviews and casual conversations.

If your walls aren't ideal for posting work, you can buy 8-foot by

4-foot sheets of foam core and lean them against your walls. Get some nice Washi tape to post your designs in style (and easily peel off later). Leave markers and sticky notes nearby so your team and anyone in the company can easily jot down feedback and post it.

Our work is plastered and posted all over the walls of the studio — not finished things, but notes, photos, and artifacts of what we're working on. Over time, we see projects unfolding as they're posted, and we can give each other feedback along the way. By sticking your work up on a wall, you invite an ongoing dialogue about making your project better. It makes your work tangible, shareable and visual, which gives it a much better chance of receiving feedback and critique.

George Aye — GREATER GOOD STUDIO

The design team at Greater Good Studio has gone so far as to create project bays, a modular space to post work for critical discussion. Each new project they begin gets its own bay—a

physical manifestation of their progress.

Figure 3. At Greater Good Studio, every project gets a space for posting design concepts and conducting design reviews.

The fidelity of the work you post can influence the feedback you get. Pixel perfect comps may lead others to believe the work is finished, which will inhibit feedback. Work that's lower fidelity or with notes scribbled on it will make it clear to all that you're still working through ideas.

Remote

Remotes teams can also set the stage for feedback using tools like Slack, Trello, Google Hangouts, and of course, InVision. The entire design team at InVision is distributed and uses their own product to conduct design reviews. LiveShare, a design collaboration feature in InVision, lets the team present and get

real-time feedback. Early ideas are explored with Freehand and Boards, later becoming Prototypes that are again shared with the team for feedback.

With so many affordable tools at hand, remote teams can easily build feedback into their design process too.

Bringing everyone into the process

Once your space is set up and designs are being posted, pay attention to how people behave. In person, are more people stopping by, curious about your work? Are spontaneous conversations happening in front of design work? Do you see designers staring at the wall, head tilted, pondering what's been posted? Online, are people commenting on work shared on Slack or InVision? Is your Trello board exploding with links to new ideas?

These are all positive signs that your culture is shifting for the better. You're bringing everyone into the design process!

"We have a value here [at Slack] of working out

in the open, and transparency."

Diógenes Brito — SLACK

Formalizing the feedback process

Designing out in the open is just the first step. Your team will also need to get feedback on their designs, sync with teammates to make sure progress is being made, and learn from mistakes. This is a tall order and calls for different types of feedback processes.

Let's take a look at a few ways to get your team the right feedback at the right time.

Design reviews

When they should happen: Early, midway, and at the end of a project

Who should be there: The designer plus no more than 7 people

How it helps: Designers get the feedback they need to refine their work

Design reviews are critiques that let designers get detailed feedback that's framed by the project goals. Design reviews can happen at a number of different points in a project. It's often helpful to do it early on so the designer can get fresh perspectives before investing too much time in an idea that may be misguided. The midway point and towards the end of a project are also natural times to get additional input.

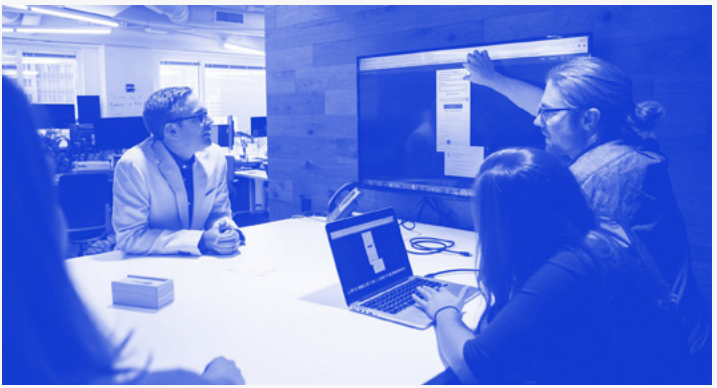


Figure 4. The Capital One design team conducting a design review.

Never use a design review as a big reveal of project. If you wait until you have everything polished, you'll be too invested to accept the feedback you're given.

Design reviews are a great opportunity to bring in experts from other teams. Colleagues from customer support, engineering, QA, legal, marketing, or even an executive may have a new perspective to help you see the problem differently. But try not to overload the guest list in these reviews—too many people and you'll have a hard time guiding the conversation.

Design reviews are not a free-for-all. They should be run with these rules in mind:

Use a facilitator

The designer is not the best person to facilitate a conversation about her work. She'll have biases that could influence the feedback, and she needs to be free to listen to the conversation unencumbered. The facilitator will write down all of the feedback and share it with the design team after the review.

A facilitator will set the ground rules for the conversation:

- State the time limit for the design review

- Introduce the designer and remind everyone that feedback should not turn into committee design. “Susan is the designer of the work we’re reviewing today. We’ll be helping her get fresh perspectives on her work, but let’s offer feedback—not design suggestions. She will use our feedback to inform her decisions.”

- Let people know how they should give feedback. “Feedback should be specific and candid. Let’s point out what’s working well and what needs refinement. Remember, we’re critiquing the work, not the designer.”

Don’t rush into the review. The facilitator should give everyone time to review the work and for their observations to take shape in silence before the conversation begins.

Frame the problem

The facilitator should give the designer an opportunity to frame the problem at the beginning of the review, including

any user and business goals. For example, "Users want to save money more effectively, and we want to keep customers engaged by teaching them to manage their money better."

Identify the constraints of the project: "Due to legal constraints, we have to disclose this information *before* the user can enroll in this new program." If reviewers aren't aware of the constraints and goals of the project, their feedback is unlikely to be helpful.

Say what you need

The designer should state what she needs from the design review: "I'm trying to determine if this photo upload workflow is intuitive." This will help keep the feedback focused, and prevent the group from wandering into unproductive conversations.

If there are 3 or 4 specific questions you want answered, define them. Without goals everyone will work from different assumptions, and it will be more of a brainstorm meeting than a

critique.

Scott Berkun — AUTHOR OF THE MYTHS OF INNOVATION

Don’t pitch, just listen

The designer should not pitch her idea or over-explain her designs. If she does, she robs everyone of the fresh eyes they bring to the design review. Once the designer has framed the problem and stated her needs, she should simply listen to the feedback.

Diógenes Brito, Slack

Listen Online: Feedback evolves as company scales

Design standups

When they should happen: Daily, if possible

Who should be there: Everyone on the design team

How it helps: Your team gets the chance to sync up on projects

Design standups are short, daily check-ins that help your team stay abreast of the work being done. As the name suggests, everyone remains standing in these meetings so no one can get comfortable enough to launch into a soliloquy.

In a standup, each team member answers 3 questions:

01. What did you do yesterday?

02. What will you do today?

03. Are there any impediments in your way?

While most teams choose to conduct standups in the morning, you may want to consider doing them after lunch—the morning is when our minds are clearest and ready to focus on creative

work.

Don't let standups turn into impromptu design critiques. If someone needs immediate design feedback, ask that they hold the request until after the meeting. A standup should be short and focused on project progress.

"At NPR, we have iterated with different ways we can keep connected."

Liz Danzico — NPR & SVA

Retrospectives

When they should happen: After a project is launched or a sprint is completed

Who should be there: Everyone who worked on the project

How it helps: Your team will internalize lessons from each project

Every project is a learning opportunity, but if you don't pause to take stock, valuable lessons will slip by. When you've launched a project or completed a sprint, reflect on what went well, what was confusing, and what didn't go so well.

Matth Spiel, Director of Design at Treehouse, conducts retrospective meetings regularly. He sends a pre-retrospective survey to the team before the meeting to capture each person's perspective individually. This helps to eliminate the bandwagon effect, which happens when the views of the group conform to those of a few vocal people.

> Retrospectives are a valuable tool to use because they help teams identify strengths and weaknesses. They help provide the designers at Treehouse an opportunity to give feedback on our processes in order to grow and improve.
>
> Matt Spiel — TREEHOUSE

Matt asks his team to rate their performance both as a group and as individuals on a scale from 1 to 5, where 5 is the highest. Ratings tend to cluster in a similar spot, but occasionally there

are outliers. Team members who've given starkly different ratings are asked to share their views in the meeting to promote transparency and honesty.

Discussion in Treehouse's retrospective meetings is centered around 3 questions common to most Agile retrospectives:

- What worked well for us?
- What didn't work well for us?
- What can we do to improve our process?

These questions are sometimes referred to as Start, Stop, Keep—what should we start doing, stop doing, and keep doing?

Honest conversation about each of these questions becomes easier with the cultivation of trust and plenty of practice running retrospective meetings.

Postmortems

When they should happen: After a project has gone poorly

Who should be there: Everyone who worked on the project and an impartial facilitator

How it helps: Your team will learn from their mistakes and find a way forward

Not all projects go well. Some go horribly wrong, requiring all teams involved in the project to come together to consider and learn from the mistakes they made.

Though projects rarely go awry at Etsy, they've established a strong process to guide them through those that do. Their process follows many of the recommendations set forth in the Agile methodology.

Here's how a typical postmortem is run:

- **Before the meeting:** Send an email asking the team to identify key points in the project timeline. This will be used to construct a master timeline of events, which will be discussed in the meeting. By focusing on events,

you'll avoid negative finger pointing, which can derail the process.

- **Moderator:** Choose a moderator. This person, who wasn't on the project and can be impartial, should be guiding the conversation from the whiteboard, taking notes for all to see.

- **Ground rules:** The moderator should first point out that this is not a blame session. It's a conversation about the shortcomings of the team's process, not the people involved. It's an opportunity to learn!

- **Facts:** People recall events differently. The moderator can help the team agree upon what actually happened so lessons can be extracted. Establishing a timeline of events can help pinpoint where things went wrong.

- **Lessons and actions:** As key lessons are identified, they should be written on the whiteboard for all to see. The actions required to mitigate the problems stemming from the failed project also need to be identified, assigned an

owner, and provided a clear deadline.

- **After the meeting:** The lessons learned from the postmortem should be emailed to the entire team, along with the action items that are to be completed.

Postmortems can seem rough, but they're far superior to repeating the same mistakes. They're a powerful opportunity for your team to learn and improve your processes.

"We use a lot of different methods for sharing design work…"

Katie Dill — AIRBNB

Putting show and tell into practice

> You know you have a healthy design culture when people are giving each other feedback.
>
> Dustin Senos — FORMER HEAD OF DESIGN, MEDIUM

I've mentored a number of talented designers seeking guidance on their career path. All tell me the same thing: "I just want to work somewhere where I can grow and learn." As they visit various companies, interviewing for their next design post, they can sense right away if the environment will give them the growth opportunity they crave. How? They recognize the signs of a company with a culture of feedback.

They see work on the walls. They see the messy signs of creative progress. Design critique is fluid and not limited to formal meetings. These are the signs of a healthy design team, fueled by feedback and always improving.

Building a culture of feedback takes time, but these simple steps will help you enact change:

- **Rethink your design studio:** Create areas for work to be posted to foster spontaneous design discussion. It's okay to be messy. Scribble on comps, add notes, post different

versions of the same concept.

- **Stay in sync:** Schedule short, daily standup meetings for your team to sync up on projects. It may be best to schedule them at the end of the day, so you don't block the mornings when minds are most creative and ready to design.

- **Make time for feedback:** Schedule design reviews for every project. They should be frequent enough for designers to get the feedback they need to avoid going too far down the wrong path.

- **Learn and grow:** Schedule retrospectives after every project to capture lessons learned. When things go wrong, a postmortem meeting will help you learn from your mistakes without pointing fingers.

Hiring, coaching, and retaining great designers is made much easier when design and feedback are out in the open. Help your team show their work and tell you all about it.

Further reading

Make Space: How to Set the Stage for Creative Collaboration

Always Show Your Work: Why Designers Write on Walls and So Should You

How to Give and Receive Criticism

Google Ventures Guide to Running a Design Critique

How to Run Design Reviews

Scott Berkun on How to Run a Design Critique

9 Rules of Running a Successful Design Critique

How the Designers at Treehouse handle Critique

Improving Design Critiques at Treehouse

Discussing Design: Improving Communication and Collaboration through Critique

Agile Retrospectives: Making Good Teams Great

Blameless Postmortems

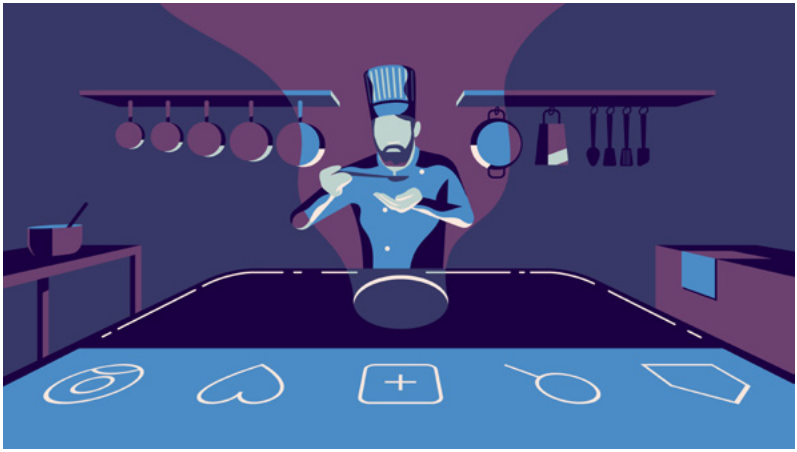
A Peek Inside A Facebook Design Critique

Design Criticism and the Creative Process

Etsy's Debriefing Facilitation Guide for Blameless Postmortems

Inside a Design Critique with Facebook

Running productive design critiques



Chapter—05

Fast feedback

Product prototyping—accelerated

Have you ever watched a great chef at work—the kind of chef worthy of a coveted Michelin Star? Whether she's in the kitchen, the field, or at the market, she's always tasting the food. Her palette guides her to the right flavors, aromas, and textures that combine to create an unforgettable meal. The alchemy of great cooking can only happen when the chef gets feedback at each step of her process.

Similarly, design teams that produce great products have something in common—**they habitually test their designs.** Before a single line of code is written, they build high-fidelity prototypes and put them in the hands of colleagues and customers, collecting fast feedback and correcting course *before* development.

These product design teams have a huge competitive advantage over those that get feedback only after their product ships: *they learn faster.* They spot problems quickly and fix them. They talk to customers early and align the product to their needs.

PRO TIP — Learning faster

Learning faster means shipping more polished products that

attract customers faster.

The software industry isn't the first to grasp this principle. The animation industry was transformed by an underdog studio in Los Angeles that found a way to learn faster than the big New York studios by getting fast feedback.

Learn fast, leap forward

In the early 20th century, the boundaries of animation had been drawn and the industry was happily operating within them. The medium was crude—settings were flat, characters lacked personality, and the content was often limited to slapstick gags.

Then Walt Disney Studios changed everything.

Disney's faith in the medium as an artform pushed the studio to experiment with new ideas that lead to astounding technical achievements. In 1928, they introduced sound with the release of *Steamboat Willie*, and in 1932 they introduced full color with Flowers and Trees. Each is an impressive achievement,

but it was the studio's contributions to process that enabled animation to evolve into the rich medium we know today.

In 1931, seeking faster feedback on their drawings, Disney animators began making what they called "pencil tests:" rough drawings on inexpensive negative film that they fed into the Moviola, a device with a small screen for viewing footage.

Figure 1. Les Clark, one of Walt Disney Studios' first animators,

viewing a quick pencil test through a Moviola.

This process let Disney animators meticulously refine their drawings immediately, not weeks or months later, and enabled them to learn the art of the medium faster than any other studio. Soon the animators began stringing together pencil tests to review entire scenes, the interaction of characters, and the delivery of the story.

> In our little studios on Hyperion Street, every foot of rough animation was projected on the screen for analysis, and every foot was drawn and redrawn until we could say, 'This is the best we can do.
>
> Walt Disney — DISNEY STUDIOS

Walt Disney Studios' prototyping method pushed the medium into new territory. While other studios produced silly gag films to make people laugh, Disney created art with emotionally complex characters that made audiences cry.

By building **fast feedback** into their creative process, Walt Disney Studios was able to make a huge leap. What worked

for Disney can work for your design team too. Don't worry, you won't need to track down a Moviola on eBay. All you need is a high-fidelity prototype.

"Snow White Pencil Test"

Walt Disney Studios

Prototyping and tools

Prototypes let us present product concepts to colleagues and customers without diving into the production process. A good prototype is a balancing act—it feels like a real product, but doesn't require a lot of time to build.

I used to create prototypes using HTML, CSS, and JavaScript. It was a painful, time-consuming process that affected my judgement when testing. I'd spend a week or more producing a prototype that was vaguely realistic enough to show customers. When feedback called for big changes, I found

myself reluctant to act, as the work seemed daunting.

That process seems ridiculous today, as we're in a golden age of product design tools. We can now create prototypes that are much higher fidelity in less time without writing a single line of code. With less time invested, tweaks to a prototype come easy.

There are a number of prototyping tools on the market—more than we can cover here. Do some research to find the right fit for your needs. As you consider various prototyping tools, ask yourself these questions:

- Is it easy to focus on product design problems, or will I be fiddling with the tool or code?

- Can I deploy my prototype to various devices to create a realistic testing experience?

- If you're working remotely, is it easy to share the prototype and conduct remote testing?

"Typically, we will go to a higher fidelity [prototype] earlier on in the process."

Andy Law — NETFLIX

InVision and Sketch

As you might've guessed, we're partial to prototyping with InVision. Before joining InVision, my product design team at MailChimp used InVision to prototype new apps and explore feature concepts. It helped us move fast and get the feedback we needed. We shared InVision prototypes with the engineering team early to get feedback and keep everyone in sync.

Many product designers have transitioned from Photoshop to Sketch, which lets you work on multiple screens in a single file. You can save common UI elements like buttons and forms as shared symbols to build a screen quickly. There are a number of great learning resources to guide you if you've yet to make the leap to Sketch.

Craft by InVision, a suite of free plugins for Sketch and

Photoshop, creates a tight integration between Sketch and InVision, shortening the prototype design process. It lets you pull real data from an API, fetch content from a site, or grab elegant photos and drop them into your design file to make your UI more realistic. Craft even lets you build a prototype directly in Sketch.

Design tools today are doing for product design what Disney's pencil tests and the Moviola did for animation—they're shortening the learning process so the craft can evolve faster.

Keynote

Keynote, Apple's popular presentation software, has become a go-to prototyping tool for many designers. It's simple enough that almost anyone can prototype with it, and sophisticated enough to do elegant animations that make a series of images feel like a real app.

Install Keynote on your iPhone or iPad to run prototypes on the target device, making the testing experience more realistic. Design prototypes in Keynote faster with Keynotopia's UI templates for both iOS and Android. If you end up doing a lot of prototyping, you'll probably want to take some time to create

your own UI template library so you don't have to continuously apply your brand's colors and style to stock elements.

PRO TIP — UI kits

Use these free UI kits from InVision to make building a high-fidelity prototype fast and easy: NOW, Chat, Do, Relate, Tethr

Faster prototyping with a pattern library

Your product prototyping process can be accelerated exponentially when you work with a pattern library—a collection of standard elements that can be combined like LEGO blocks to create a new UI. Creating a pattern library is time consuming work, but it pays off with the design of each new product or feature.

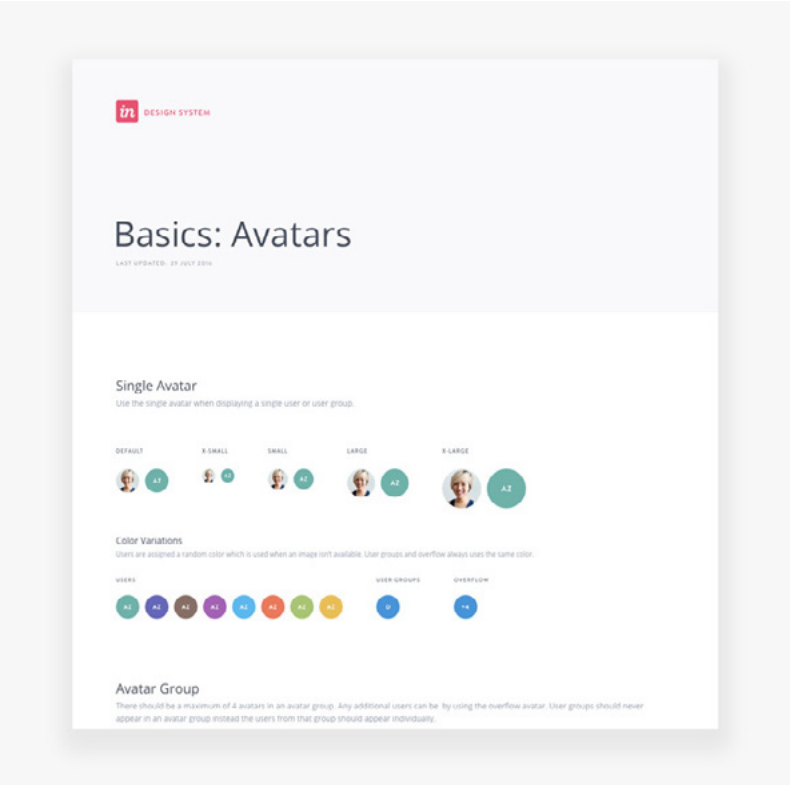


Figure 2. The InVision design team has built a pattern library that speeds up design and maintains consistency though the team is located around the world.

Facing UI fragmentation across many products and platforms, the design team at NASDAQ revised their schedule to spend time creating a pattern library. The process was intense, but helped them unify the user experience across all of their products. There was an additional benefit they hadn't initially

anticipated—*prototyping with a pattern library helped them move very quickly*.

Spending less time noodling on UI treatments means designers can focus more on aligning the product to customers' needs. Companies like Salesforce, IBM, Atlassian, MailChimp, Spotify, and Westpac have all developed detailed design systems that help them design new products quickly.

> "You can really focus on which parts of the prototype you can bring up to a good level of fidelity."
>
> Daniel Burka — GOOGLE VENTURES

Getting feedback on your prototype

Testing internally

With your prototype built, you can start collecting feedback. Before you put your prototype in front of customers, spend time talking with your design and engineering colleagues. They'll help you look at the UI with fresh eyes, and reconnect with the key objectives of the project. Now's a great time to conduct a design review.

Deploy your prototype to the devices you'll be targeting so everyone can get a feel for the real experience. It's not uncommon for designers to walk around the building to grab a few colleagues for an impromptu test of a prototype. Great feedback can come from unexpected places, so look beyond the design and engineering teams.

With feedback in hand, revise your prototype accordingly and get ready to test with real customers.

Testing with customers

You're going to learn a lot as you show your product prototype to your customers. Your ideas and assumptions will be put to the test, which may at times make you uncomfortable. It can be frustrating to watch users struggle with your design.

Your instincts might lead you to help customers figure out how to use your app, but you'll taint the feedback if you do. Instead, stick to your testing script or work with a moderator who can conduct the tests impartially.

Michael Margolis, UX Research Partner at GV, follows a very simple process as he conducts tests with customers: a welcome, an ice breaking period, the introduction of the prototype, the test, and a debrief. Michael's script is wonderfully simple and easy to remember. Dive into his process in more detail in the book Sprint from GV.

> "When we're developing new ideas…it's really valuable to get some fresh eyes and fresh perspective…"

Michael Margolis — GOOGLE VENTURES, FROM THE 5 ACT INTERVIEW

Elaborate usability tests are a waste of resources. The best results come from testing no more than 5 users and running as many

small tests as you can afford.

Jakob Nielsen — NIELSEN NORMAN GROUP

According to research conducted by the Nielsen Norman Group, the majority of problems with your prototype will be identified after testing with just 5 customers. Instead of testing more customers, Jakob Nielsen recommends another small batch of tests after refinements have been made.

Recruiting customers

Running the test is actually the easy part of the feedback process. Finding test subjects is the hard part. If you have an existing customer base, query your database to find power users. Devout customers are often excited to see new design concepts, and will likely give more informed feedback. This is their chance to influence the design process!

If you're testing a prototype for a brand new product, you'll need to be more creative in how you recruit. Once again, the GV team has a clever solution. They create a form to screen customers that asks a few carefully considered questions. A

worksheet guides them to create a screener that will target the right kinds of people. They post a link to their screener form on Craigslist, Twitter, Facebook, and send to an existing mailing list if available. Since you'll only need about 5 test subjects, you don't need a high response rate to the screener.

Be prepared to compensate your customers for their time—remember, they're doing you a big favor by testing your prototype.

Alternatively, you could hire a professional recruiter to find customers for you. The downside is it can be very expensive, and it won't be a hands-off process. You'll still need to give them enough information to target the right customers.

> When we don't have a live product built and we need to get feedback, we can send a prototype to researchers to have it tested. It allows us to get feedback not just from drivers in San Francisco but from all around the world.
>
> Molly Nix — UBER

Testing remotely

Not all the customers you recruit will live nearby. You'll need to make plans to conduct tests remotely too. Gregg Bernstein, Senior User Researcher for Vox Media, has developed an elegant system to conduct tests with users remotely using inexpensive, freely available software—a rig that runs just $99, a small price to pay for fast feedback!

Here's how he does it:

- Gregg shares a Calendly link with a potential test participant, letting her select a convenient test time. Calendly also lets Gregg ask for permission to record the session, and lets him send details on what the test participant can expect.

- The Vox design team posts a prototype to InVision.

- Gregg invites the participant to an InVision LiveShare—a shared screen with voice chat where the customer can use the prototype while Gregg asks questions, observes, and takes notes.

- The session is recorded using ScreenFlow.

- After the test session is complete, Gregg re-watches the video to fill in gaps in his notes. He then shares those notes and his insights with his Product team via Slack.

This process is simple and fast, yet effective. It lets Vox's remote product team get feedback from users anywhere without hopping on a plane.

A service like Lookback.io can also help you get fast feedback from both colleagues and customers remotely. InVision and Lookback integrate to let you test a mobile app prototype with customers. It records the customer's screen, their interactions with your prototype, and even overlays a video of their face as they use your app, helping you read their emotional state.

When your app is built, your developers can integrate Lookback into your app so test sessions can be triggered any time. Users can shake their phone to reveal a secret button that triggers Lookback's recording feature. All sessions are stored in a central dashboard for designers and developers to review and make revisions.

Lindsey Campbell, UX researcher at InVision, has a unique

approach to getting customer feedback remotely. She's set up a Slack channel to share prototypes with devout customers to get early feedback and bring customers into the design process. The design team monitors the feedback and tweaks the product as needed.

Related: Get stakeholder approval 46% faster

Better, faster product prototyping and testing

Like a chef sampling her ingredients, designers need to get a taste of the user's experience while designing, not just after the product ships. When you shorten the feedback loop, you can learn faster how to make a product that will appeal to your audience. Here's some guidance to get you started.

- **When should I build a prototype?** After you've done initial research and worked through many ideas on paper.

- **How much of the app should I build in my prototype?**

Don't waste time prototyping the entire app. Focus instead on the parts about which you have the most questions.

- **How real should my prototype be?** It should be real enough that customers won't realize it's just a prototype.

- **When should I show others my prototype?** Early and often. Don't let yourself get too far down a single path before you start getting feedback from colleagues. Show your prototype to customers after you and your colleagues have ironed out the kinks.

- **Who should I show it to?** Start with the people in your design or product team. Be sure to get an engineer's perspective to ensure the design you're proposing is technically feasible.

- **How should I present my prototype?** It's always best to show the prototype on the target device if possible. Frame the problem you're trying to solve before you ask for feedback from others.

We're fortunate to know the importance of testing, and to have access to tools that make capturing feedback cheap and easy. Whether remote or in person, your team can build fast feedback into your process so you can build better products faster.

Further reading

Why You Only Need to Test With 5 Users

Sprint: How to Solve Big Problems and Test New Ideas in Just Five Days

6 Ways to Save Time in Rapid Prototyping

Get Higher Fidelity Prototypes With Less Work Using Overlays

How To Prototype UI Animations In Keynote

Prototyping iOS Apps with Keynote

An inside look at the process of redesigning the Uber Partner app from the ground up

Remote User Testing at Vox

How to Test Prototypes with Customers

Recruiting Test Participants for Usability Studies

From Pages to Patterns

Getting Started With Pattern Libraries

Building a High-Fidelity Prototype in One Day

Six Steps to Superior Product Prototyping: Lessons from an Apple and Oculus Engineer

Chapter—06

Lateral design

We're better together

To design better, we need to look beyond the confines of our craft. Design is more than color and form; **design is the act of planning with the intention to serve others**. Under this definition, the borders of design stretch beyond a single team.

Engineers, product managers, and researchers all have an important part to play in the design of a product. Their work, like ours, shapes the user experience. But despite shared interests, teams are often siloed by discipline, which makes collaboration and communication difficult, even dysfunctional.

Organizational design influences product design—significantly. If the relationship between the people who make a product is broken, the product will be broken too.

Broken teams, broken product

Here's a scenario that plays out in companies far too often: Courtney and her team spent weeks perfecting the design of a new product. They presented the final concepts to stakeholders, got immediate sign off, then handed off their design files to Everett and his engineering team.

Though the dashboard design was stunning, Everett's team had to gut it because the data Courtney's team wanted to

display wasn't actually available. They also had to throw out the account sign up design because the designers hadn't included all the necessary fields.

As Everett's team continued to build the app, the distance between the intentions of designers and the execution of engineers widened. When Courtney finally got a peek at the app, she was horrified and said, "This looks nothing like the design we created!"

She walked across the building to engineering and stormed into Everett's office to demand an explanation. Everett, frustrated that he and his team weren't consulted earlier, curtly explained the design concept was ignorant of engineering requirements.

The relationship between design and engineering was already rocky—this wasn't the first time they'd felt out of sync. Now it had gone from bad to worse, and the product was a reflection of their animosity. It was a mess.

Like an episode of HBO's Silicon Valley, this story may hit a little too close to home. Courtney and Everett are out of step, as their organization is operating with a handicap—they have a *vertical* relationship. Design, at the top of the process, passes

work down to engineering to execute—engineers aren't part of the problem solving phase. Subsequently, Courtney's team missed key technical details and key parts of the design had to be scrapped.

Vertical relationships also flow the other way—from engineering to design. Engineers rush to build a product's infrastructure and pass it to designers for decoration afterwards. The results are equally disjointed, as buttons and type might look nice, but workflows built around database models instead of mental models leave users confused and frustrated.

Both scenarios are broken. Great products blend design and technology seamlessly. The *feel* and *function* of a product are interconnected, and equally important—like the right and left hemispheres of our brain that pass information laterally to synthesize creative thinking and logic.

We can take a cue from nature. When we bring teams together to work laterally—working on the product at the same time in the same place—we can reduce process entropy and create better products.

Cross-functional teams

Cross-functional teams are a hallmark of the Agile process. They bring together engineers, designers, and a product manager to define a product's purpose, function, and feel.

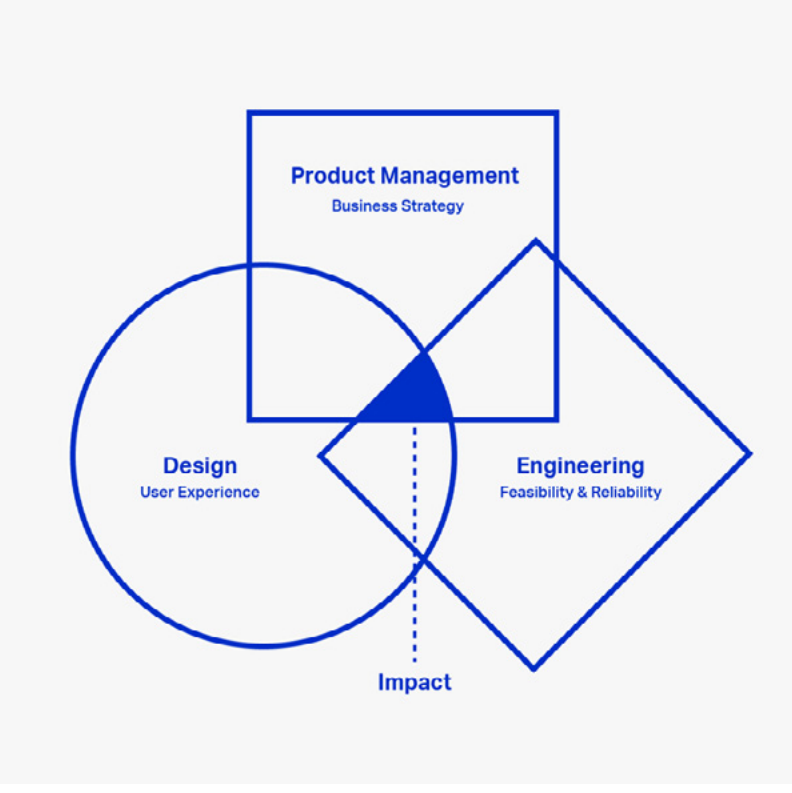


Figure 1. Airbnb is organized into small, cross-functional teams that bring together design, engineering, and product management.

Three elements define a product: the business, the code and the pixels. Give each a voice in all product decisions.

Alex Schleifer — AIRBNB

Cross-functional teams work laterally. *Together* product managers, designers, and engineers work to understand the problem and conceptualize solutions concurrently, not linearly, giving each team member a voice in key decisions.

Unlike the vertical workflow Courtney and Everett followed, cross-functional teams have no grand handoffs where communication falls apart and political battles erupt. No one is downstream. Pixels and code come together simultaneously around a clear business strategy.

PRO TIP — Product managers

The role of Product Manager (also called a Product Owner) can vary, but in most organizations they're responsible for the product roadmap and achieving the business' goals. They keep the team on schedule and clear any barriers to progress.

Cross-functional teams have many benefits:

- Working closely, designers and engineers develop a strong understanding of their colleagues' craft.

- The rapport established within cross-functional teams fosters empathy and respect that make collaboration easier (and more fun).

- Communication is much faster; designers are immediately made aware of the technical challenges their decisions create, and engineers learn when function diminishes form.

- Diverse perspectives each step of the way lead to better product solutions.

- Shared ownership dampens political fighting and builds trust.

Though a team may disband after a feature launches, strong bonds remain (like friendships formed in summer camp). This can only strengthen the company culture.

The benefit of small teams comes down to three words: communication, focus, and camaraderie. Smaller teams are easier to keep current on project status, changes, and new learning. Dedicating your team to one project keeps everyone on the team focused on the same priorities all the time. Having the team all in one place allows relationships to grow between colleagues.

Jeff Gothelf — AUTHOR OF LEAN UX

PRO TIP — Team size

Keep your cross-functional teams small—no more than 10 people to make communication easy. Any more and the team will have to spend time creating process documentation and scheduling meetings to keep everyone synced. Team collaboration and communicate happens more fluently when everyone in a shared space.

Dipping a toe in the water

To make sustainable improvements to the way your organization designs products, you may need to take a red pen to your organizational chart. These sorts of changes don't come easy or quickly.

But before doing anything drastic, you can test the waters with some small experiments. Small projects with tight deadlines are a great place to start experimenting with cross-functional teams.

If time is tight, start by investing just 1 week in a Design Sprint.

Design sprints

A design sprint is a 5-day process developed by Google Ventures for answering critical business questions through design, prototyping, and testing ideas with customers. Because it takes just 1 week, it's a low-risk way to try out a lateral design process in a cross-functional team.

The Google Ventures group goes into great detail in their Sprint book and its related websites, but in short, over 5 days

a small team will go from understanding the problem space to validating a design solution.

If you survive the sprint and produce a great product idea, you'll have set the stage for more cross-functional teamwork in the future.

Working groups

Like design sprints, working groups assemble a cross-functional team to tackle a tough problem. But working groups stay together much longer than a week to produce a final product that's actually shipped to customers. After the project is complete, everyone returns to their respective teams.

Working groups have:

- Clearly defined objectives and metrics to measure success
- Designers, engineers, a product manager, and maybe even a design researcher

- The autonomy to make key decisions about the product they're building

- A deadline to ship

MailChimp has a long history of assembling working groups to focus on hairy projects. One such team was created to design a new drag-and-drop email editor.

A designer, a front-end developer, and 2 engineers—one of whom had a talent for prototyping—sequestered themselves behind closed door in a small MailChimp office to tackle the project. Sketching and debating, they looked at the problem from all angles.

Sketches turned into simple prototypes. The designer explored UI concepts and made refinements. Developers coded out the new design, tweaking interactions as they went. Back and forth they worked, always sharing progress with each other immediately and inviting debate.

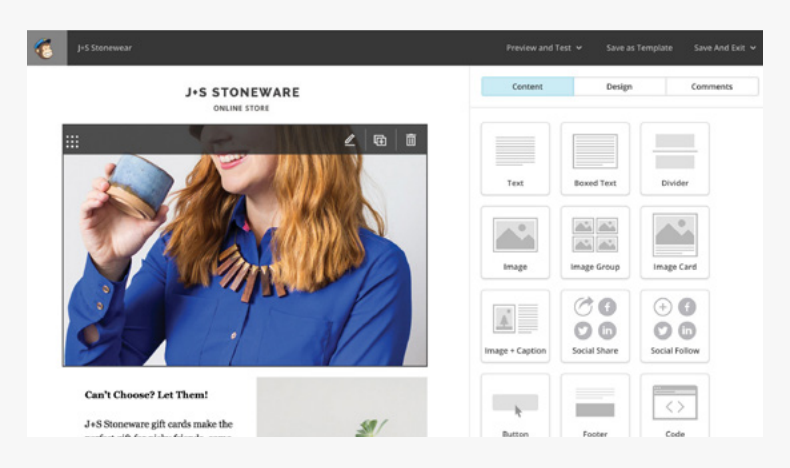


Figure 1. The MailChimp email editor is the product of lateral design in a working group.

Eventually, the prototype had reached its limits. After testing with the whole company and select customers, the new editor, Neapolitan, eventually shipped. This working group gave the company the opportunity to escape the gravitational pull of the product roadmap to go deep on an important feature that made working in MailChimp easier and faster.

Everyone on the working group returned to their respective teams with respect for their colleagues and their craft, and knowledge of what could be accomplished when designing laterally.

Going further: Institutionalizing lateral design

Big wins from working group projects can spark conversations about optimizing the rest of the company. The cross-functional team structure that enables lateral design can be scaled up by uniting engineering, product management, and design in an organizational structure commonly referred to as EPD.

Alex Schleifer, VP of Design at Airbnb, describes EPD as a 3-legged stool that supports the organization.

> The team should resemble a three-legged stool, in which each leg represents one of the three areas that helps build a product. If it's done from the start, each function can grow in parallel at proper ratio as the broader organization scales.
>
> Alex Schleifer — AIRBNB

Figure 2. The EPD structure is like a 3-legged stool—engineering, product, and design need to be equal to achieve balance in product design.

A stool with 1 leg shorter than the others causes instability and imbalance. Similarly, EPD organizations are unstable when a function of the troika is weaker or more powerful than the others. EPD's strength comes from sharing power.

Each function of EPD must be involved and aligned from a product's inception to its launch. EPD teams are typically organized around product features by areas of the user experience:

- Facebook organizes its teams by product feature like news feed, profile, or messenger.

- Airbnb organizes teams around areas of the user experience like the guest or host experience.

Like workgroups, each team is cross-functional, with representation from each leg of the EPD stool.

> "We see more impact through a collaboration between engineering, product, and design."

Katie Dill — AIRBNB

The success of EPD is directly connected to the health of the relationships among the 3 leaders of engineering, product management, and design. Dysfunction from the top will

trickle down to the respective teams quickly. It's imperative that these 3 leaders remain united in their leadership and communication to the company.

PRO TIP — Better cross-function collaboration

On the FirstMark Capital blog Alex Schleifer describes how Airbnb unifies staffing and hierarchy across EPD to make collaboration and planning more efficient.

The challenges of cross-functional teams

Though cross-functional teams offer a number of advantages, they can be challenging. Workgroups, because they're temporary, rarely surface significant issues. Instead, designers might feel like they're on a vacation—they get to learn new things before returning to the comforts of home.

Permanent cross-functional teams are more like expatriating—designers will wrestle with their identity and struggle to adapt

to a foreign land. Read on to learn how these problems, though common, are being solved at a lot of great companies. Going into an EPD structure with open eyes and a set of solutions will help you transition smoothly.

Isolation

As we saw in Show and Tell, designers need regular feedback from other designers. In a cross-functional team, it's common for a designer to operate alone, which leaves them craving conversations with peers. Organizations like Slack, Twitter, and the BBC offer some interesting solutions.

Slack: Paired design

Lateral design in cross-functional teams is a mainstay at Slack, but designers always work in pairs, with 1 acting as the lead designer.

> Pair design gives you a partner in crime to help you explore ideas more. It's two people

with similar or complementary skills riffing off each other. Plus when you have two people, it helps you get unstuck faster when you hit a roadblock.

Diógenes Brito — SLACK

You can pair designers even if you're short staffed. Pair a designer with a colleague from another team who can spend about 8 hours per week (or just a little over an hour per day) working in tandem on design problems.

"Having that kind of collaboration be really low friction…brings the quality of everything up."

Diógenes Brito — SLACK

Twitter: Design reviews

In early 2014, Twitter transitioned from a centralized design team to embedding designers in cross-functional teams. In order to prevent designers from feeling isolated or unable to

consistently learn from their colleagues, Mike Davidson, VP of Design, scheduled weekly design reviews and other activities in the design studio to bring everyone together as a team. Congregating regularly gave all designers the opportunity to discuss the overall design style of the company and keep everyone in sync.

BBC: Rotate teams

The BBC, with more than 20,000 employees, lets employees work on a new team every year. This policy helps all employees, not just designers, form new relationships and broaden their understanding of the organization.

Designers who want to rotate within the UX&D team speak to their manager to explore the idea. Approval is common if they've spent over a year on the same team. The resource manager facilitates the transfer, taking into account the designer's skills, career goals, and current team availabilities.

Aligning style and values

Decentralized design teams have to work a bit harder to make sure design remains consistent across features and products. The style of each UI and the values that guide design decisions can fall into disarray if teams are left without clear guidelines. Many large organizations are working hard to solve this problem, but few more than Spotify.

Spotify: Design systems and values

As a company scales, design consistency becomes more difficult to manage. Companies like Salesforce, IBM, the BBC, and Atlassian created a design system to solve UI consistency issues, but Spotify used their design system to solve an organizational problem too.

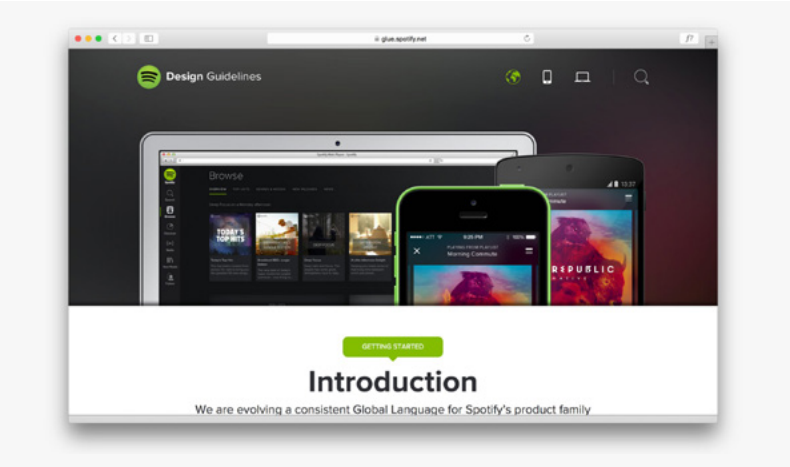


Figure 3. Spotify's GLUE design system helps all teams produce consistent UIs, and is managed by a central team.

The team that manages Spotify's design language—called GLUE (a Global Language for a Unified Experience)—is the center of the design universe in the company around which all other design work orbits. Designers regularly sync up with the GLUE team to get guidance on new UIs and suggest additions to the design language.

A system isn't a project with an end, it's the origin story of a living and evolving product that'll serve other products.

Nathan Curtis — EIGHTSHAPES

Design systems, once thought of as an occasional side project, are playing a more central role in large organizations, making them a perfect place for designers to converge and find common solutions.

Guilds

Designers in cross-functional teams throughout Spotify are joined together by a design guild—a community of interest where knowledge, tools, and best practices can be shared. Anyone, not just designers, is welcome to join discussions in the design guild. A guild coordinator is responsible for managing activities.

Spotify's guild structure comes from the Agile practices developed by the engineering team.

Values

Outnumbered as they often are in cross-functional teams, designers acquiesce to engineers who encourage smaller

design iterations and a simpler approach. *Do we really need that animated transition?* Does it add much value? It's difficult to champion the necessity of small details when you're the lone designer. Many simply give in and get back to work.

> As the only designer in a cross-functional team, you're accountable to a different set of values than you would be if you were working with other designers.
>
> Mike Davidson — FORMERLY TWITTER

There's nothing wrong with a little pushback between designers and engineers—it keeps both from becoming self-indulgent. But often, engineers push back on design simply because they don't understand how to measure the success of a design.

Engineers measure success quantitatively:

- How many lines of code were required?

- Did this impact site performance?

- How many bugs did we ship?

Designers measure success qualitatively:

- Does it look good?

- Is it easy to use?

- Is it delightful?

Just as an engineer's work shouldn't be measured by design metrics, a designer's work shouldn't be measured by those of an engineer. Instead, designers and engineers, working together, must form a shared understanding of what constitutes success.

Recognizing this need, Spotify articulated a series of design values—principles that communicate what's most important when solving a design problem—and made them available to the whole company. Common values help designers articulate their design decisions.

For example, a large image occupying key space in a UI may seem indulgent to an engineer—*Is this photo really necessary? We could fit more data here if we get rid of it*. With the support of well defined design values in the vein of Spotify, a designer might respond, "Our design values state that a UI should 'be alive'. This image creates movement, adds color, and brings an otherwise stagnate UI to life."

With a shared set of design values, priorities and how they're communicated becomes clearer.

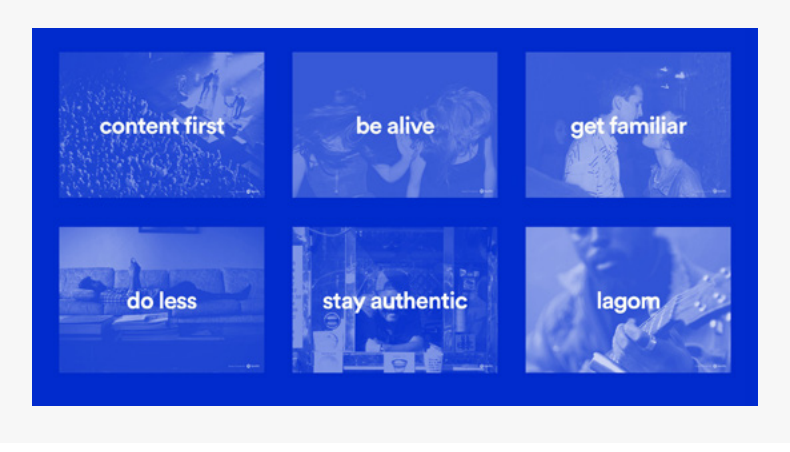


Figure 4. Spotify established design values to guide all teams as they work on disparate projects.

Lateral design in practice

Lateral design is not organizational dogma. Whether your company is Agile, Lean, or something in between, it creates a spirit of respect and empathy between domains to produce great products.

Organizational design influences product design. Shared ownership, collaborative problem solving, and blended teams are key.

Here's your to-do list as you put lateral design into practice in your company:

- Starting small with a 1-week design sprint.

- When you've had a taste of the benefits of cross-functional teams, create a **working group** to tackle a project with a clear timeline and defined outcomes. You should have designers, developers, and a product manager on the team.

- When your organization is ready to go further, organize

teams in an EPD structure. Engineering, product, and design should share power, and report directly to the CEO or COO.

Further reading

Org Design for Design Orgs

Lean UX: Applying Lean Principles to Improve User Experience

Sprint: How to solve big problems and test new ideas in just five days

How Envato's Agile UX Team Works

Structuring A Design Team In A Continuous Delivery Agile Environment

Building a Cohesive Design Team

There's No Handoff in Product Design

Design Doesn't Scale

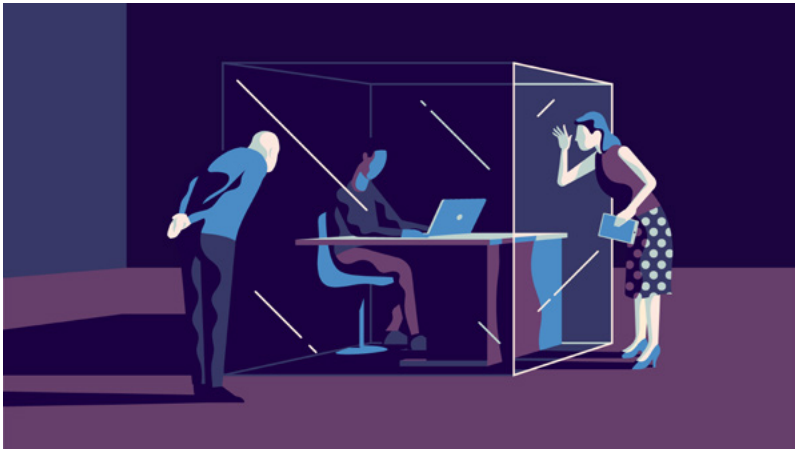
Defining Product Design: A Dispatch from Airbnb's Design Chief

The Power of the Elastic Product Team

Inside The Organic UX Design Process At Slack

Team Models for Scaling a Design System

Inside The Organic UX Design Process At Slack



Chapter—07

Break the black box

Product design is people

Tom felt lost. After 4 years of tremendous growth, his company was no longer the scrappy startup he'd originally joined. In those early years, Tom simply rolled his chair over to a colleague's desk when he needed feedback on a design. The work was collaborative, feedback was immediate, his work was known and respected. It was fun! He was able to put on his headphones and devote all of his attention to design.

Then things changed.

The product and company grew—fast. He built out his team, and so did his colleagues. The company moved to a bigger office to accommodate all the new people, and before he knew it, a physical and mental distance developed between his design team and the rest of the company. The designs his team produced weren't always on the radar, and subsequently, stakeholders no longer understood the value of the team's work.

Sound familiar? This scenario is common for most growing companies. Design—once transparent, and integrated into the product process—becomes a black box, isolated from engineers and stakeholders, and in the precarious position of being misunderstood or ignored.

When design isn't visible, it's no longer powerful.

At a small company, it's easy to grasp the state of a project by asking a colleague for a peek at their designs. In large companies, spontaneous design conversations rarely happen; design is separated from executives and developers. Designs often remain guarded until a grand reveal brings stakeholders together. By that point, it's too late for honest feedback—the stakes and repercussions are that much higher because so much energy and emotion have already been invested in what's likely an off-the-mark design.

This is a dangerous place for product design. It sets the stage for spiked projects and designers searching for more fulfilling work. And of course, designers aren't the only ones who suffer. Companies that don't ship their best work run the risk of unrealized potential and less satisfied employees.

But it doesn't have to be this way.

"There is this larger question around company culture… What are the values that the company embodies."

Irene Au — KHOSLA VENTURES

Connecting design in a large organization

As a company grows, everyone has to work harder—and smarter—at communicating. Designers who succeed in large organizations create social capital by developing a rapport with colleagues across the organization.

You'll have to get in the habit of stepping away from your computer to create the social capital you need. Grab lunch with a developer who may build out your next design. No need for an agenda—just get to know each other. Spend time with researchers who have their finger on the pulse of your customers, sales people who hear frequent requests, product managers who understand schedules and scope, and customer service agents who know where users struggle the most. All have valuable context to offer you. Each influences the success of your work.

> Your legs are your most effective design tool. Get out and connect with people.
>
> Mark Opland — FACEBOOK

And don't just network laterally—spend time with different stakeholders and executives to understand their roles and expectations. Ask questions about the broader strategy of the company. You'll need to understand the big picture to design products that fit into the company vision.

Figure 1. Designers at the BBC stay connected with other teams by scheduling informal time with colleagues.

As you become connected to colleagues on other teams, not only will your designs be more informed, you'll create inroads

into your work, putting design on everyone's radar.

We see our greatest successes when we involve the right people along the way.

Ryan Page — CAPITAL ONE

Making design inroads

"…I would go to the CEO, and explain design in a different language."

John Maeda — AUTOMATTIC

It's important to bring stakeholders into the design process early and often to get feedback and fresh perspectives. Sharing your work digitally makes it easy to gather feedback from specific people, but there's value in setting the stage for unsolicited feedback, too. Surprising things happen when

you print screens and post them in a space where passersby can catch a glimpse. Leave Post-it notes and pens nearby and see what happens—I've gotten incredible feedback from unexpected sources with this approach.

Unlike digital, print is persistent and casual. It invites spontaneous participation even when you're not around, which is perhaps its greatest strength.

When design is accessible to all, the process feels inclusive.

Product design is often protected—intentionally or not—from those who are perceived to be outside the process. That's a shame, because often experts are excluded simply because they don't move in the same social circles at work. Take note of who leaves useful feedback so you can include them when you share your next digital prototype.

Regularly scheduled design reviews can be a great way to not only keep your design team synced, but to forge connections with other teams. While at the health tech company Counsyl, Laura Martini made a habit of inviting engineers and execs to design reviews to get new perspectives for her team, but also to put design on people's minds.

I often invited influential people in the company to my team's design reviews so our work remained visible. My team was a little nervous about showing their early work to company leaders, but I knew it was important to do.

Laura Martini — FORMERLY COUNSYL

Laura Martini, Medisas

Listen Online: Speak the language of your decision makers

Todd Dominey, Director of Design at MailChimp, found sharing digital prototypes crucial to creating inroads to his team's work, but that face-to-face design reviews go further still to help the company see the big picture.

Digital tools and devices are helpful, but nothing beats personal interaction. Schedule

as much time as possible (without it becoming disruptive) for people to share work and be exposed to what's happening outside their immediate purview.

Todd Dominey — MAILCHIMP

"We have these huge foamcore boards [where we post projects]…"

Andy Law — NETFLIX

Making a change

Design teams aren't the only ones who struggle as a company scales. All teams do. The flat structure and fuzzy roles that once made communication easy in a startup must give way in an enterprise to a well defined org chart and domain experts for the train to stay on the tracks.

Things have to change, and so do we.

You'll need to be more than a pixel pusher. You'll have to learn to communicate. Spend less time at your desk and more time talking to colleagues. You'll need strong relationships to do high impact design work.

> The graph of impact tends to correlate with how many people you need to work with effectively. Once I realized this, I started to see my interactions with other people differently. It was no longer about winning battles and proving that I was right, but about developing stronger collaborative relationships.
>
> Julie Zhuo — FACEBOOK

The black box that alienates and disempowers design will sneak up on you. Don't wait for it to take hold of your company. Build inroads into your work now if you want to elevate design and build better products. Here's your to-do list:

- **Share early and often.** Set Design Review days on your team's calendar and invite anyone to participate.

- **Network and build social capital.** Your org chart is not a list of names; it's a group of potential allies. Get to know them.

- **Be open and accessible.** Post your work in a public space. Present your work at company coffee hours. Talk about your work and answer questions in a company Slack channel.

Solicit feedback every step of the way. This isn't design by committee, but good ideas—and constructive criticism—can come from anywhere.

Further reading

The Subtle Art of Being a Designer at a Massive Company

Seeing the Elephant

Unintuitive Lessons of Being a Designer

Welcome to the Executive Team, It's Messy Here