

Foundations of the User Experience (UX) Design

Module 1: Introducing User Experience Design

Characteristics of Good User Experience

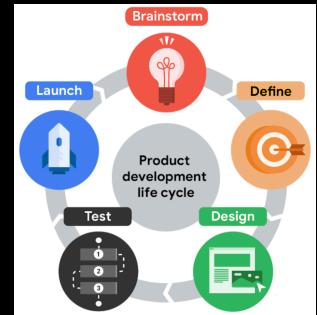
The 5 stages of the Product Dev Life Cycle

Brainstorm Stage

- This initial stage emphasizes generating ideas about user needs and challenges.
- Research is crucial, involving interviews and other methods to understand the target audience.

Define Stage

- Insights from brainstorming are used to narrow the focus and determine how the product will impact users.
- Specific details about the product, its audience, and necessary features are established.



Design Stage

- UX designers actively develop ideas and ensure they align with the defined specifications.
- Various assets like storyboards, wireframes, and prototypes are created to visualize the user experience.

Test Stage

- The product design is evaluated based on user feedback to identify areas for improvement.
- Interaction between UX designers and engineers is essential to refine the design for usability.

Launch Stage

- The final stage involves sharing the product with the public, such as launching an app or website.
- Post-launch, there may still be opportunities for enhancements based on user feedback.

As a product moves through the development life cycle, the team might need to spend longer working in one stage than in others, or repeat certain stages based on feedback. The success of each stage depends on the previous stage's completion, so it's important to do them in order.

Check out each of the five stages of the product development life cycle!



Brainstorm

The first stage of the product development life cycle is the brainstorm stage, when the team starts thinking of an idea for a product. Your team might already know the user problem that you want to solve when you begin the product development life cycle. If not, coming up with a list of user problems is a great place to start.

It's important to pay attention to the diversity of your team at this stage. Teams that have meaningful diversity across identifiers like race, gender, abilities, family structure, age, and ethnicity are generally more effective at brainstorming because they bring together a lot of different lived experiences.

Consider this example: If you're designing a new app to help working parents and guardians, your team might start the brainstorming stage by listing common problems that working parents and guardians face, like a lack of reliable childcare, transportation concerns, or trouble managing schedules. Your team might review user feedback about other similar products or the results of user surveys to help guide your ideas. After you've brainstormed lots of user problems, your team chooses one and starts coming up with ideas for solutions to that problem.

The brainstorm stage is also an ideal time to check out your product's competitors and identify if there are already similar products available in the market. You want your product to fill a gap in the market or solve a problem better than existing products. Completing research into both your competitors and your users helps determine what problems need to be addressed by the product's design.

One more thing to keep in mind: A UX designer at a large company might not be very involved in the brainstorm stage. But a UX designer at a startup or small business could have a big role to play!



Define

The second stage of the product development life cycle brings together UX designers, UX researchers, program managers, and product leads to define the product. The goal is to figure out the specifications for the product by answering questions like: Who is the product for? What will the product do? And, what features need to be included for the product to be successful?

During the define stage, your team narrows the focus of your idea. One product can't solve every user problem. Continuing with the example for an app to help working parents and guardians, your idea should focus on helping parents and guardians find reliable

childcare or manage their schedules, not both. In this stage, a UX designer might help the team pin down the focus of the idea, but a product lead will probably be the one to define the scope of the project.

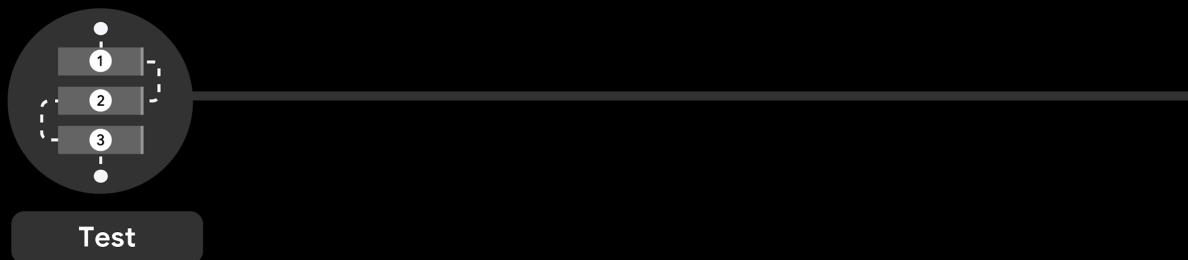
The research you completed in the brainstorm stage comes in handy now. Using what you've learned, you will pinpoint your potential users' problems. Your team can't assume they know what problems users are experiencing without asking the users directly.



The third stage of the product development life cycle is design. At this stage, UX designers develop the ideas for the product. Generally, UX designers start by drawing wireframes, which are outlines or sketches of the product, then move on to creating prototypes, which are early models of a product that convey its functionality.

UX writers are also involved in the design stage and might do things like write button labels or other copy within the product's wireframes and prototypes.

At this point in the life cycle, UX designers make sure to include all of the product specifications that were outlined in the define stage. You might also check to ensure that each part of the design fits together in an intuitive way. For example, UX designers might check that the screens of an app flow in a way that makes sense to the user. Or that each interaction, like tapping a button, has a correlating action, like an item getting added to a cart. On the other hand, with a physical product, UX designers might check that one piece of a physical object matches up to the connecting piece. Finally, UX designers also make sure that each task a user needs to complete is clear and easy to understand, like navigating from the homepage to the checkout confirmation page in an app.



Next, your designs move into the test stage. UX designers work with engineers to develop functional prototypes that match the original designs, including details and features that fit the company's brand, like font and color choices. This also means writing the code and finalizing the overall structure of the product.

Or, if you want to test your designs earlier, another option is to test a functioning prototype of the product, using a design tool like Figma or Adobe XD. You'll learn how to create prototypes of your designs later in the certificate program.

At this stage, the designs go through at least three phases of testing: internal tests within your company, reviews with stakeholders, and external tests with potential users. A stakeholder is a person you need to work with to complete the project or anyone who has some interest in the project, either within or outside of the company.

Running these tests is typically the responsibility of the UX researcher on your team, if you have one.

- First, the team tests the product internally to look for technical glitches and usability problems. This is often referred to as alpha testing.
- Then, the product undergoes a test with stakeholders to make sure the product is aligned with the company's vision, meets legal guidelines for accessibility, and follows government regulations for privacy, for example.
- Finally, there's an external test with potential users. This is the time to figure out whether the product provides a good user experience, meaning it's usable, equitable, enjoyable, and useful. This is often referred to as beta testing.

Gathering and implementing feedback at this stage is absolutely critical. If users are frustrated or confused by your product, UX designers make adjustments or even create new versions of the design. Then, the designs are tested again, until there's little or no friction between the product and the user.

It's important to call out that the product development life cycle isn't a completely linear process. Your team might cycle between designing and testing a few times before you're ready to launch the product!



Finally, you've arrived at the fifth and final stage of the product development cycle: the launch stage, when the product is released into the world! This might involve listing an app in the Google Play Store or Apple's App Store, making a website go live, or putting a physical product on store shelves.

The launch stage is a time to celebrate your work and start promoting the product. Marketing professionals on your team might post about the new product on social media or publish a press release. The customer support team might get ready to help new users learn how the product works.

Program managers also meet with the cross-functional team to reflect on the entire product development life cycle and ask questions like: What worked and what could be improved? Were goals achieved? Were timelines met? Making time for this reflection is super important, since it can help improve the process going forward.

For a physical product, the launch stage might be the end of the product development life cycle. But for a digital product, like an app or website, launching the product to a wider audience provides another opportunity to improve on the user experience. New users might find problems with the product's functionality or features to improve that no one noticed before. So, after the launch stage, teams will often cycle back to the design and testing stages to start working on the next version of a digital product.

The Roles within the UX Design Career

To help you get started, this reading will explore a handful of different careers within the field of user experience.



Interaction designer

Interaction designers focus on designing the experience of a product and how it functions. They strive to understand the user flow, or the path, that a typical user takes to complete a task on an app, website, or other platform. At Google and many other companies, interaction designers are a specialized type of UX designer.

An interaction designer's work answers questions like: What should happen if a user taps on this button? How do we make this action easier for users to complete? And, how are the design elements within the website laid out? Interaction designers focus less on how the product looks and instead strive to make the product easy to navigate and simple for users to interact with.



Visual designer

Visual designers focus on how a product or technology looks. They are often responsible for designing logos, illustrations, and icons, as well as deciding on font color, size, and placement. Visual designers focus on the layout of each page or screen and make all of the design elements fit together in a visually appealing way. At Google and many other companies, visual designers are a



Motion designer

specialized type of UX designer.

The role of a visual designer is to answer questions like: What kind of visual style should icons have, in order to fit the product's branding? Or, which color and font should we use for this button? The goal of a visual designer is to delight users with designs that inspire, engage, and excite them.

Motion designers think about what it feels like for a user to move through a product and how to create smooth transitions between pages on an app or website. They may also create animations or visual effects to bring their design ideas to life. At Google and many other companies, motion designers are a specialized type of UX designer.

A motion designer's work answers questions like: How should an app transition between pages? How do we show the connection between these actions? And, what's an engaging animation that will help tell our story? Motion designers focus on design elements that move, rather than traditional static designs.



VR/AR designer

Virtual reality (VR) and augmented reality (AR) designers create products that provide users with immersive experiences, unbounded by the limits of the physical world. Virtual reality involves a wearable headset that takes over a user's vision; it blocks out their physical surroundings and immerses them in a completely virtual world. For example, VR can feel like you're entering the setting of a magical imaginary land.

On the other hand, augmented reality uses the physical world as a backdrop and adds virtual elements on top of it. Users are still contextually aware of their surroundings, but their reality is augmented, or enhanced, by adding elements through a screen. For example, you can sit in your actual kitchen, and an AR experience can add digital images, like a new barstool or a piece of artwork, to the room around you.

A VR or AR designer's work answers questions like: How do we create a user experience that leverages 3D space? Or, will this action cause a user motion sickness? To ensure users are comfortable immersing in a VR or AR experience, designers need to carefully consider everything from sound to lighting.



UX researcher

UX researchers conduct studies or interviews that examine how people use a product. UX researchers often identify pain points that users are experiencing and explore how products can help solve those problems. They also explore the usability of existing products, by asking users to complete tasks in an app or website, for example.

UX researchers answer questions like: What problems are users facing? Is the design of this product easy to use? And, would people be interested in this new design feature? The goal of UX researchers is often to understand how a product can provide a solution to a real problem users are having.



UX writer

UX writers think about how to make the language within a product clearer so that the user experience is more intuitive. UX writers also help define a brand's voice and personality. The work of UX writers often includes writing labels for buttons and determining the tone of language used within an app or website.

UX writers focus on answering questions like: What words should be used to communicate this idea clearly? Should the tone for this app be friendly or technical? And, what should the language on this button label say? UX writers often become subject matter experts in order to present content that's easy to understand for all users.



UX program manager

UX program managers ensure clear and timely communication, so that the process of building a useful product moves smoothly from start to finish. This might include setting goals, writing project plans, and allocating team resources.

UX program managers answer questions like: What are the overall goals for this project, and what's the plan to achieve them? And, how can we create and improve processes within the team? UX program managers work across departments to make sure that UX is involved throughout a project lifecycle.



UX engineer

UX engineers translate the design's intent into a functioning experience, like an app or a website. They help UX teams figure out if designs are intuitive and technically feasible.

UX engineers answer questions like: How do we implement each interaction? How do we build this design in a way that stays true to its original intent? And, how might we explore alternatives to determine the best user experience? UX engineers synthesize design and development, bringing product concepts to life.



Conversation designer

Conversational interfaces are everywhere, from intelligent virtual assistants like Google Assistant and Siri, to interactive voice response systems like customer service systems you can talk to. Conversational interfaces even include automobile navigation systems and chatbots! Conversation design incorporates natural, real-world conversational behaviors into the interactions between users and these systems.

Conversation designers make it possible for users to have natural conversations to get things done. They leverage user research, psychology, technical knowledge, and linguistics to create user experiences that are intuitive and engaging. Conversation designers develop the “persona” or personality of the voice, as well as the flow and dialog of the interaction.

Conversation designers answer questions like: What's the ideal language and flow based on who users are, the task to be accomplished, and the context of the conversation? Does the personality of the virtual assistant seem genuine, engaging, and reflective of the brand values? How does the conversation work with on-screen elements? Does the virtual assistant offer a consistent, usable, and useful experience end-to-end?

Most Common UX Tools

The field of UX design and the tools used by designers have evolved over the last several years. Initially, UX designers commonly used Adobe Creative Suite tools, such as Photoshop. These tools were used mostly for print and static design. But, as technology and the demands for UX design evolved, so did the need for increased functionality of digital tools. [Sketch](#) was released in 2010 and was the first digital-forward design tool built specifically for UX designers. In addition, more tools like [Freehand](#) by Miro, released in 2011, and [Zeplin](#), released in 2015, came along, offering prototype capabilities and opportunities for easier collaboration.

As organizations have continued to digitally transform and move towards dynamic work environments, UX tools have had to keep pace. The increase in remote workers, along with dynamic work environments, has presented a need for UX designers to find the right-sized toolset to fit their desired output.

Today, the demand for modern, digitally collaborative tools has not subsided. [Figma](#) and [Adobe XD](#) both took center stage in the UX design world when they were released in 2016. Today, Figma holds one of the biggest stakes in the collaborative design and prototyping market. It offers real-time collaboration, Dev Mode for engineers, and in-product prototyping features, in addition to many custom plug-ins for unique design needs. Adobe XD has since gone into maintenance mode, but it offered a robust solution for UX designers for many years. To learn more about Adobe XD's maintenance mode, you can refer to the [Adobe XD troubleshooting guide](#). These features facilitate a collaborative element, for teams who are not working in face-to-face environments.

Going forward

Most of the modern UX tools used by UX designers have similar functionality, with some unique features and robust online learning libraries. You will likely use more than one design tool throughout your career. However, in this certificate program, the focus will be on Figma. You'll learn how to use it, and you'll work on projects you'll be able to include in your UX design portfolio.

Considerations when choosing UX tools

Don't worry - you don't have to choose a UX tool today! But, at some point in the future, as you dive deeper into your UX design career, you'll want to choose UX tools that work best for you and the specific projects you're working on. As you gain a better understanding of UX design and the UX design tools, there are a few things you'll want to consider when selecting a UX tool:

Who you are as a designer

You may end up pursuing a job as a UX designer. Or, you may end up in a role that is a variation of UX design—for example, a visual designer or a motion designer. You learned about various UX design jobs in [Jobs in the field of user experience](#).

Understanding what UX tools work best for you will ultimately be informed by the role you take on and the corresponding responsibilities and job tasks.

The design context

Another consideration for choosing a UX tool will be the design context in which you work. In some cases, the organization may dictate the tool you use simply based on what it already uses. Or, you may have the flexibility to decide on the tool based on the type of project you are working on or the level of collaboration among team members you may need. These are just a few factors that may influence the type of UX tool you choose.

Capabilities of the tool

When you get to the point of choosing a UX tool, you'll also need to consider the capabilities of the tool. You'll learn more about these capabilities later in this certificate program. Going forward, you'll investigate the tool and ask questions such as:

- Does it allow for mobile-responsive design?
 - For example: You may create templates and layouts for various devices. Does the tool account for, and adapt to, different screen sizes?
- Does it allow for prototyping, testing, and reviewing?
 - For example: You'll eventually want to build a prototype, or sample, of a product. Does the tool allow you to build the prototype? Does it allow you to test how it works? And, can the tool allow other stakeholders or designers to review it and provide feedback directly into the tool?
- Does it allow for team collaboration?
 - For example: You will likely work on a team with several people. Can each team member work in the tool? Can revisions or suggestions be made by other team members?
- Does it allow for a centralized design system?
 - For example: You likely won't be the only designer on a project. With multiple team members and collaborators, consistency is key. Does the tool allow the team to view and/or copy styles and properties to ensure consistency across the project?

UX tools—an overview

In this certificate, you'll focus on Figma. Figma is one of the preeminent UX tools. There are other UX tools, mentioned previously, you can look at for comparison.

Sketch, Freehand, and Zeplin

- Work well with very large teams that may struggle to adopt new tools
- Paired most commonly with another of these tools
- Do not require WiFi, enabling offline design work
- Do not afford real-time collaboration, prototyping, or design to development collaborative activities

Figma

- Is excellent for most designers and contexts
- Includes FigJam access, a whiteboard for brainstorming, diagramming, and strategizing
- Requires WiFi connection
- Is a digital-first, remote-friendly, all-in-one tool, allowing for easier sharing, designing, collaboration, and reviewing in our ever-changing, more virtual workspace

Do your research

Check out each tool's website for additional information. As you educate yourself on each tool's features and benefits, you'll be able to choose the UX tool that is right for you. But remember: You'll be introduced to Figma and you'll learn how to use it throughout this certification course.

- [Sketch](#)
- [Freehand](#)
- [Zeplin](#)
- [Figma](#)

Stay current with the UX industry

The field of UX design is constantly evolving. To succeed in the field, you have to keep up with the latest tools, standards, and best practices. Thankfully, the UX design community is as supportive as it is innovative: There are tons of great resources out there to help you master the fundamentals, grow your skills, and stay current. Find the resources that work for you, and check them regularly to get support and learn about recent developments.

Thought leaders in UX design

Thought leaders use their expertise to define and improve their fields. In UX design, many thought-leading organizations offer free or subscription-based resources to help you grow your skills and create great designs.

[Nielsen Norman Group](#): Founded by two early leaders in the field, the Nielsen Norman Group offers training, consulting, articles, reports, and other resources to help individuals and organizations grow and innovate in UX design.

[UX Collective Blog](#): The UX Collective offers curated posts from UX designers around the world. You can browse their homepage for topics of interest, check out their editor's top picks, and subscribe to their newsletter for regular updates.

[Interaction Design Foundation](#): Driven by peer-reviewed research and evidence-based design practices, this foundation offers open-access UX design resources, such as articles and textbooks, as well as fee-based courses and classes.

[UX Planet](#): This resource offers guidance on everything from UX design fundamentals to advanced careers in the field. Check out their offerings on User Experience, UX for Beginners, UX Careers and Agencies, and more.

[Growth.design](#): Looking for examples of great UX design at work? Want to know more about the psychology behind UX? Seeking inspiration for your own designs? Growth.design provides weekly case studies of real-world examples in fun, comic book formats.

[Case Study Club](#): This community of UX and product designers shares design case studies to help you build your skills, grow your confidence, and prepare for new roles. It's made up of more than 28,000 members, including Google, Spotify, and Adobe.

[Awwwards](#): Get more inspiration by exploring globally recognized UX designs. Awwwards showcases these designs in easy-to-explore experiences that highlight specific design elements, like font and color.

[UXPodcast](#): This podcast and blog explores how digital media professionals balance business, technology, and society in their work. It aims to break down the organizational and disciplinary silos that separate UX designers and other digital media professionals.

Communities of UX designers

Plugging into UX design communities is one of the best ways to grow your craft while expanding your professional network. These organizations facilitate and host design-centric discussions, meet-ups, and other social experiences. Get connected!

[Creative Mornings](#): This group hosts free virtual field trips and in-person meet-ups for creative professionals in cities around the world. Check out their website to explore upcoming events, watch talks from past meetings, and find a chapter near you.

[AIGA](#): The Professional Association for Design, or AIGA, supports UX designers and other design professionals. In addition to hosting an annual conference, they offer resources on fundamentals, innovations, and professional development in the field.

[ADPList](#): With a focus on designers' growth and professional development, ADPList is a mentorship service that matches aspiring designers with more experienced peers for feedback and advice.

Many UX design communities are developed by and for groups that are underrepresented in the field. These communities support designers and work to make the UX industry more inclusive for everyone:

- [APIwho.design](#)
- [Blacks Who Design](#)
- [Ladies that UX](#)
- [Latinxs Who Design](#)
- [Techqueria \(Latinx in Tech\)](#)
- [Women Who Design](#)
- [Queer Design Club](#)

Tool-hosted UX tutorials

Because most digital design tools are updated regularly, you'll find that online help tutorials can at times have out-of-date screenshots or instructions from older versions of the interface. Thankfully, the organizations that license these tools maintain robust libraries of up-to-date training resources. Here are some links into key parts of the training libraries for Figma, Sketch, Freehand, and Zeplin.

Figma

- [Help Center](#)
- [Get Started - Guide](#)
- [Figma for Beginners Tutorial](#)
- [Figma YouTube Channel](#)

Sketch, Freehand, and Zeplin

- [Sketch Docs](#)
- [Sketch 101](#)
- [Freehand](#)
- [Zeplin Start Guide for Designers](#)

Creator-made UX tutorials

When in doubt, ask the internet! Whether you're facing an unfamiliar new challenge or just looking for inspiration, there's a good chance that some other UX practitioner has tried something similar to what you are working on. So, use Google and YouTube (including YouTube Shorts) to search for creator-made tutorials about different design tasks and tools. TikTok has also become a very popular place to share tips on Figma. These tips and tutorials are often really detailed, with explanations of specific pitfalls, features, and challenges you may not anticipate.

Open-source design templates

In UX design, there's often no need to reinvent the wheel. Many design tools host libraries of open-source templates, which are licensed to be publicly available for download and for personal and commercial use. With these templates, you can experiment with unfamiliar designs and quickly spin up new designs for your own work. They make it easy to keep features you like and tweak those you don't. As you play with them, you'll start to apply your own style and preferences. Here are links to template libraries from some leading design tools:

- [Figma Template Community](#)
- [Adobe XD UI Kits](#)
- [Sketch UI Kits](#)
- [Airtable Template Community](#)
- [Miro Template Community](#)

Job Responsibilities

Entry-Level UX Designer Responsibilities

- Research: UX designers conduct research to understand user demographics, motivations, pain points, and preferences to inform design decisions.
- Wireframing: They create wireframes, which are basic outlines or sketches of a product, to visualize the layout and user interaction.

Prototyping and Information Architecture

- Prototyping: Designers develop prototypes that demonstrate product functionality and user flow, which can be created digitally or physically.
- Information Architecture: They establish the structure and organization of a website, ensuring users can easily navigate and find information.

Communication Skills

- Effective Communication: Entry-level UX designers must communicate well with colleagues and stakeholders through meetings, emails, and proposals to ensure alignment on design goals.

Specialists, Generalists, and T-shaped designers

Generalists

- Generalists have a broad range of responsibilities and often perform various tasks, such as user research, visual design, and usability testing.
- They are common in smaller companies where employees wear multiple hats and learn different skills on the job.

Specialists

- Specialists focus deeply on one specific area of UX design, such as interaction or visual design, and typically work in larger organizations with dedicated design teams.
- They possess in-depth knowledge in their chosen field, allowing them to excel in that particular role.

T-shaped Designers

- T-shaped designers combine specialization in one area with a breadth of knowledge in other UX design aspects, represented by the vertical and horizontal lines of the letter "T."
- This role allows for versatility and collaboration across different design disciplines, enhancing overall design effectiveness.

The Role of a Beginner UX Designer

As you start out on your path to becoming a UX designer, you're probably curious about the actual work your new career might involve. In this reading, you can explore the different responsibilities that entry-level UX designers commonly take on during a project. You'll also review the differences between generalist, specialist, and T-shaped UX designers.

But first, a quick call out: You'll probably notice a lot of new vocabulary and unfamiliar terms in this reading. Don't worry! You'll learn about each of these concepts in more depth throughout the certificate program. We'll also provide a glossary of important terms and their definitions at the end of each module of content.

Responsibilities of an entry-level UX designer

As an entry-level UX designer, you'll have a lot of exciting opportunities to gain experience. When you first start out, you'll probably take on a lot of different roles and responsibilities.

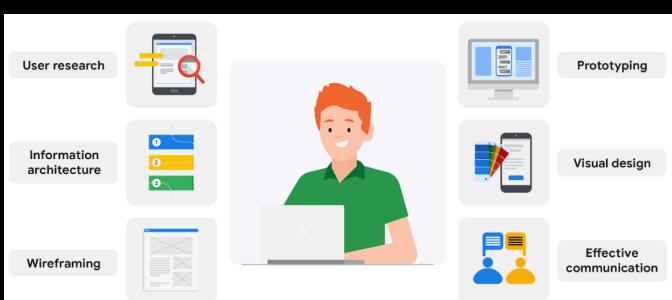
Icons include user research (a tablet with magnifying glass over it)

Information architecture (a series of 3 colored, numbered bars)

Wireframing (a graphic of a wireframe)

Prototyping (a graphic of a desktop monitor with prototype of mobile device on screen)

Visual design (a mobile phone next to paint swatches)



Effective communication (a graphic of two people talking)

User research: User research is about understanding the people who use your product. Through research, you'll learn about users' backgrounds, demographics, motivations, pain points, emotions, and goals. Your research methods might include surveys, observations, and interviews. We'll explore user research in much more detail in an upcoming course.

Information architecture: Information architecture, or IA for short, involves deciding how your product is organized and structured. Think of IA as a skeleton that outlines how users interact with your product. Everything in your product should be organized in ways that make sense to the user and meets their expectations.

Wireframing: A wireframe is a basic outline or sketch of a product or a screen, like an app or website. As the name suggests, wireframes look like they were created with wires. They're mostly lines and shapes, with some text. Wireframes can be drawn by hand or created digitally using software. Wireframing helps you bring your design ideas to life, so other people on your team can provide input and feedback.

Prototyping: A prototype is an early model of a product that demonstrates its functionality. Prototypes can be in physical or digital formats and can vary in complexity. Sometimes a prototype is made to demonstrate one specific feature of a product, like the transition between screens or the way the product physically looks and feels. You'll make multiple prototypes for any given product throughout the design process.

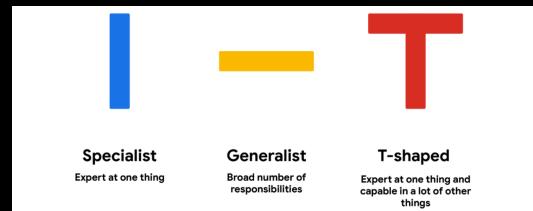
Visual design: Visual design focuses on how the product or technology looks. As a UX designer, you need to understand the foundations of visual design in order to communicate the connection between a product's functionality and its appearance to users. You'll learn some of the most important principles of visual design throughout this certificate program.

Effective communication: Effective communication as a UX designer means connecting with your colleagues through emails, meetings, presentations, and design software. UX design is a very collaborative field, so being able to communicate both digitally and face-to-face with teammates is important. You need to be a good listener, be receptive to feedback, and share your ideas in a clear way.

Specialist and generalist designers

As you get further along in your career, you can choose to specialize in a certain area of UX design or keep your skill set more broad. What exactly are the differences between specialist and generalist UX designers? Read on to learn more!

Vertical line - representing a specialist, expert at one thing.



Horizontal line - representing a Generalist, broad number of responsibilities

T-shaped - expert at one thing and capable in a lot of other things

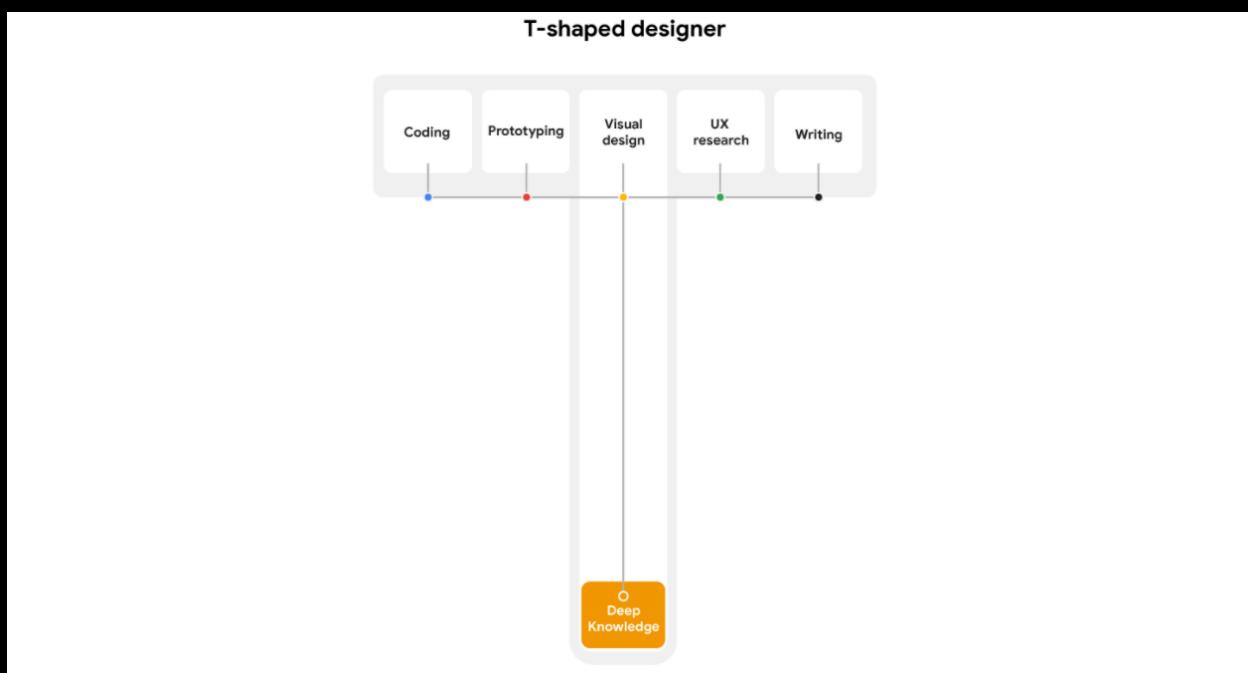
Specialist: A specialist dives deep into one type of UX design, like interaction, visual, or motion design, and becomes an expert. Specialist UX designers are more common at large companies that have a lot of designers, like here at Google. Some of the benefits of becoming a specialist include:

- Focusing on one type of design that you enjoy more than others.
- Gaining deep knowledge of one type of design.
- Becoming well-known in the industry for your expertise in a particular type of design.

Generalist: A generalist has a broad number of responsibilities. A majority of UX design jobs are generalist positions, especially at companies with fewer UX designers. Typically, entry-level UX designers work in generalist roles, and some people choose to stay in generalist design roles for their entire careers. There are a lot of benefits to being a generalist UX designer, like:

- Expanding your skills in many different types of UX work.
- Trying a variety of responsibilities and finding an area of UX that you're especially passionate about.
- Keeping your job feeling fresh and new, while doing a variety of tasks.

T-shaped: A T-shaped designer is a specialist who also has a lot of capabilities in other areas. T-shaped designers get their name because the stem (or vertical line) of a T represents their expertise in one area, while the top (or horizontal line) symbolizes their related skills in a broad number of areas. T-shaped designers are great to have on your team, since they come with the benefits of both specialists and generalists. The image below highlights some of the skills a T-shaped UX designer might have. In this example, the person is a visual design specialist but also has knowledge in other areas, like coding and prototyping.



Each designer tends to naturally have a little T-shape in their abilities, even at the beginning of their career. As you start to work on projects, you'll probably notice where your strengths and interests lie. As you get better at one area of design, you'll likely find yourself working on that part of design projects more often, which helps you continue to improve in one area.

You can also decide to direct your T-shape by developing specific skills that will open up future job opportunities. For example, you might work extra hard on your prototyping skills, in addition to your general UX design skills, which can lead to new experiences and professional growth.

Cross-functional teams come in lots of shapes and sizes, depending on the organization you work for and the project you're working on. In general, though, there are a handful of key team members that you'll get to work with as a UX designer.



Engineer

Engineers: Engineers translate designs into a functioning experience, like an app or a website. They help UX teams figure out if designs are feasible from a technical standpoint and bring that idea to life. Working closely with engineers and involving them early in the design process is critical to ensure your project is set up for success.



UX Researcher

UX researchers: UX research is all about understanding what users need and expect from your product. UX researchers use methods like observations, interviews, and surveys to understand users' unique perspectives. Findings from research can inform your design decisions each step of the way. If you work at a startup or small business, there's a good chance you'll get to do your own UX research. At larger companies though, you'll likely work with designated UX researchers who will provide research findings to inform your design work.



Program Manager

Program managers: Program managers ensure clear and timely communication across the team, so that the process of building a useful product moves smoothly from start to finish. Program managers supervise, support, and keep track of the project as a whole. They assign tasks to team members, monitor the project budget, and manage timelines, among other things. Think of your team's program manager as your go-to source of support when facing any setbacks or issues with your work.



Product Lead

Product leads: Product leads are in charge of ensuring the final product's success and communicating with stakeholders. Your product lead will define the project's core goals and deliverables, so you can focus on creating innovative design solutions. At some companies, product leads are known as product managers.



Other UX Designers

Other UX designers: In many cases, you won't be the sole designer working on a given project, especially if you work at a larger company and when you're a new designer. For example, as an entry-level UX designer, you might collaborate with a more experienced visual designer who can ensure that your designs adhere to the company's brand standards for things like color and font. Working with other designers is a great chance to learn and ask questions!

Startups and small businesses

Startups are new businesses that want to develop a unique product or service and bring it to market. Small businesses are privately owned businesses with few employees. A lot of UX designers are excited to start work at startups or small businesses because they can see the impact of their work more quickly and develop a broader range of skills.

Advantages



- Team size: Close-knit team and able to work directly with upper management.
- Growth: Opportunity for growth due to taking on many responsibilities (visual design, interaction design, user research, and more).
- Creativity: Usually more creative freedom with fewer guidelines and processes.
- Impact: Lots of impact on final products, with few people working on a project.

Disadvantages



- Mentorship: Fewer mentors to choose from within a smaller company.

- Responsibility: Most of the responsibility for a UX project falls solely on you, which can be stressful if you have little UX experience.
- Speed: Have to be comfortable working quickly and launching work that isn't perfect, with little oversight.

Big companies

At a big company, like Google, you're likely to work in teams on a specific project. Lots of UX designers want to work at big companies with the people who developed some of the most well-known products in the world. UX teams at larger companies tend to be more compartmentalized by specialization, making it easier for you to become an expert in one particular area of UX.



- Mentorship: A variety of experienced designers and other UXers to learn from.
- Growth: Lots of opportunity for growth because there are many levels of designers and management.
- Guidelines: Clearer guidelines to keep products uniform and on brand.
- Team size: More people working on one project, which means you're better able to focus on your specific responsibilities.
- Specialization: Opportunity to focus on one particular area of design.



- Team size: May feel less impactful or important as a contributor with lots of other designers on the project.
- Impact: May feel small at a company with so many features and products.
- Guidelines: Defined guidelines can be restrictive to creativity.

Design agencies

A design agency is a one-stop-shop for visual brands, products, and services. Working at a design agency can be similar in some ways to working at a small business or startup, except you have multiple companies as your clients. Many agencies tend to work on a broad range of products, so you can explore many kinds of styles and approaches to UX design.



- Impact: Lots of impact on projects, if you're the only UX designer on the team.
- Networking: Opportunity to work with senior stakeholders, different teams, and diverse clients.
- Exposure: Exposure to lots of companies and industries with different clients.

- **Resume:** Potential to work with large brands and display that work in your portfolio.



- Mentorship: Lack of mentorship if you are the only UX designer on a project.
- Monotony: Depending on the agency, you could work only on the same type of projects.
- Ownership: Might not be able to work on a project from start to finish.
- Finished product: Products you work on might not launch, depending on client priorities.

Advertising agencies

A lot of UX designers work at advertising agencies, which are teams of creatives hired by clients to build marketing campaigns. Sometimes called “creative technologists,” these designers work to create ads for brands using UX principles. This is a great option if you’re open to learning some interesting skills outside of a core UX design role.



- Autonomy: Little to no middle management means more autonomy over your work.
- Learning: Opportunity to learn about other disciplines, like branding, marketing, and graphic design.
- Variety: Every project is different based on the client.
- Networking: Work with a bunch of different brands, clients, and teams.



- Specialization: Wide variation in projects, so you might not be able to hone in on specific skills easily.
- Relevance: Work may often involve branding and marketing, and might not focus on UX design.

Freelancers

Freelancers are self-employed UX designers who are hired by clients for their independent services. Being a freelancer gives you a lot of freedom, and it’s a great way for new UX designers to gain experience in the field and add work to their portfolio.

Advantages



- Schedule: Set your own hours since you're self-employed.
- Flexibility: Can freelance while working another job or balancing competing priorities.
- Autonomy: Choose the work that you want to do.
- Experience: Build your portfolio, especially if you don't have a full-time UX job.

Disadvantages



- Structure: No one to report to, which means you have to be responsible for getting work done on time.
- Stability: Less stable than working for a company or agency, since work is not always guaranteed.
- Business: Manage the logistics of your own business, such as filing taxes, billing clients, and more.
- Mentorship: Lack of readily available mentors since you're working by yourself.

Deciding where to work

Everyone's goals as a UX designer are different, so think about what's most important to you when choosing a place to work. Consider questions like:

- Do you enjoy a lot of structure and processes, or do you like to define your own work and schedule?
- Do you value working on a big team, or are you more comfortable working alone?
- Do you want to focus mainly on UX design, or are you interested in broadening your skill set?

Module 2: Thinking like a UX Designer

Universal design, inclusive design, and equity-focused design

Universal Design

- Universal design aims to create products for the widest range of users, but often fails to meet the needs of all individuals, similar to a "one-size-fits-all" approach.
- This method can lead to ineffective designs, as it does not account for the diverse abilities and situations of users.

Inclusive Design

- Inclusive design seeks to address the varying needs of different user groups by considering personal identifiers such as ability, race, and economic status.
- The principle of "solve for one, extend to many" emphasizes that designing for specific users can benefit a broader audience.

Equity-Focused Design

- Equity-focused design goes further by prioritizing historically underrepresented groups, aiming to uplift those who have been excluded in the past.
- It distinguishes between equality (providing the same support to all) and equity (providing tailored support to achieve fair outcomes), ensuring that design efforts are more effective and inclusive.

Equity-Focused Design

- It emphasizes creating products that are accessible and fair to all genders, races, and abilities, particularly for underrepresented groups.
- Designers should critically assess the necessity of collecting sensitive data, such as gender and race, on forms like job applications and census documents.

Inclusive Representation

- The design of forms should include diverse options for gender identity to ensure inclusivity and accurate data collection.
- Inclusive images and avatars in design should represent a variety of ages, races, and genders, challenging mainstream norms.

Real-World Examples

- The video discusses how early voice assistants struggled to understand female voices due to biased training data, highlighting the need for diverse user testing.
- Designers are encouraged to use a critical lens when creating representations in their work to ensure equity and inclusivity in their designs.

Get to know Platforms

Understanding Platforms

- UX designers must design for various platforms, including desktop, mobile, tablets, and more, as users access products across different devices.
- A consistent look and feel across platforms is essential for user satisfaction.

Focus on One Platform

- While it's important to think across platforms, designers should initially focus on the platform that best meets the end user's needs.
- After establishing a primary platform, additional platforms can be designed for.

Brand Identity and Functionality

- Consistent brand identity is crucial, ensuring that products like Google Search maintain a similar appearance across devices.
- Some functionalities, like voice assistants, may only be available on specific platforms, which designers need to consider when creating products.

Design for Different Platforms

User Behavior on Devices

- Mobile sessions average 72 seconds, while desktop sessions average 150 seconds, indicating different usage patterns.
- Mobile users are typically goal-oriented, focusing on completing single tasks with gestures like tapping and swiping.

Design Considerations for Mobile

- Responsive web design is essential, allowing websites to adapt to different screen sizes for better usability.
- Best practices for mobile design include placing call-to-action buttons prominently, simplifying navigation menus, and using intuitive gestures.

Creating Effective Mobile Experiences

- Designers should account for both portrait and landscape orientations of mobile devices.
- Reducing visual clutter is crucial due to smaller screen sizes, ensuring a simple and effective user experience.

Designing cross-platform experiences.

When designing a new product or feature, it's important to think about the different types of platforms that the design will be experienced on. As a refresher, a platform is the medium that users experience your product on. Some common platforms are:

- Desktop computers
- Laptop computers
- Mobile phones
- Tablets
- Wearables, like smart watches
- TVs
- Smart displays

A product might be experienced on countless different platforms, but desktop computers, laptop computers, and mobile phones are the most commonly used platforms for interacting with apps and websites. These are the platforms that you'll spend the most time focusing on during this certificate program. In this reading, you'll learn about key considerations when designing for different platforms to help you get started.

Screen size

The first consideration when designing for various platforms is adjusting design elements and features to fit different screen sizes. For example, you have a lot of screen space when you design for desktop and laptop computers. But when you design for smaller screens, like mobile phones, you have to carefully decide which parts of the design you'll prioritize including in the limited space. This means making every word, icon, and image count!

In the first five courses of this certificate program, you will design an app for a mobile phone. In the sixth course of the program, you will design a responsive website, which allows the design of a website to change automatically depending on the device's screen size. This means you'll learn a lot more about designing for different screen sizes later in the certificate program, so stay tuned.

Interaction

In addition to the size of the screen, you also need to consider the way users interact with each platform and how those interactions might affect your design decisions.

It's also critical to consider accessibility when developing your designs at each point. Different groups of people will interact with your product in different ways, like using a screen reader, closed captioning, or a switch device. To get started, it's helpful to try using some of these technologies yourself, in order to understand how people with disabilities might interact with your product on different platforms.

Content layout

In the world of UX design, layouts refer to the way that information is organized on the screen. For example, when designing for desktop or laptop computers, you have the advantage of working with a familiar, standardized size: landscape (horizontal) mode. The screen is wide, content can be laid out in columns, and there's much more flexibility to design.

In contrast, mobile phone content is usually laid out in portrait (vertical) mode, which is ideal for scrolling. In addition, mobile phones often allow users the option to use landscape (horizontal) mode by rotating their device. Implementing this in your designs requires more work from you as a designer, but provides users with a wider range of options.

Consider the layout of content on a couple more platforms: tablets combine both the desktop and mobile phone user experience, which means you can incorporate aspects of desktop and mobile phone content layouts in your designs. Smartwatches tend to have compact square or rectangular screens, offering very little digital real estate to lay out content.

Functionality

There are a lot of reasons why users might choose one platform over another, but functionality and the kind of tasks they want to complete is a huge driver. Your designs for each platform will likely vary based on how and when you expect users to need the product.

User-Centered Design

Coach

The video lecture focuses on the concept of user-centered design and its significance in creating effective products.

Understanding User-Centered Design

- User-centered design prioritizes the needs and experiences of the user, ensuring that products solve real problems rather than just those perceived by designers.
- Larry Page, co-founder of Google, emphasized the importance of observing and listening to users, which has become a core value at Google.

The User-Centered Design Process

- The process consists of four key steps: understand, specify, design, and evaluate.
- Iteration is crucial throughout this process, allowing for continuous improvement based on user feedback.

Real-World Application

- An example is provided with Google Photos, which was redesigned to enhance user experience by allowing easier access to memories, demonstrating the effectiveness of user-centered design.

Who are my users?

In the field of user experience design, the “user” comes first. A user is a person who is trying to solve a problem and is looking for a product or service to help them solve it. The user experience is the journey that the user takes with that product or service. As a UX designer, your goal is to keep the user at the center of every decision you make, and to do that, you need to get to know your user.

Most of the initial UX research that you conduct at the beginning of the project will be focused on getting to know the characteristics of your users, their goals, and their pain points. Understanding the user empowers you to design experiences that are helpful or easy to use.

One of the key challenges of getting to know your users is avoiding taking a narrow view of the user, or making assumptions about what users need based on stereotypes. Users who seem to be different from one another might actually have shared wants and needs. Make sure to step back and get a clear picture of *all* your potential users—which often means that you’ll need to specifically plan to address the needs of users who are often overlooked.

To reach as many users as possible, you’ll consider questions such as these as part of your user research approach:

- Do my users have impairments or disabilities to consider—whether temporary, situational, or permanent?
- How familiar are my users with technology?
- How are my users accessing the product or service?
- Where and when are my users accessing the product or service?
- Have I considered all my potential users?

The goal for user research is to get the widest possible selection of potential users to include as research participants. Make sure to consider income level; demographic data such as age, gender, and ethnicity; educational background; and geographic location.

Do my users have impairments or disabilities to consider?

You might be surprised to find out that more than 1 billion people around the world have a disability, out of a global population of 7.8 billion. In the U.S., one in four adults identifies as having a disability. The term accessibility refers to the design of products, devices, services, or environments for people with disabilities. As a UX designer, it’s important to keep users with disabilities in mind as you design features or new products. Designing for accessibility isn’t an obstacle, but a way to get your products to as many users as possible.

Accessibility is about making products accessible to all people, whether they have a disability or not. Think about inclusive product features that increase magnification, like enlarged fonts. Or features that help everyone understand videos, like closed captions.

Throughout the rest of the certificate program, you’ll learn more examples of how features that were initially designed for users with disabilities became universally used by non-disabled people as well. You’ll also learn more about how to effectively apply accessibility principles to your designs.

How familiar are my users with technology?

User experience doesn't just focus on the experience of existing users, however. It also includes paying attention to the needs of people who are about to become users. Nearly a billion people, of all ages, all around the world, are getting online for the very first time.

When it comes to designing for this emerging population of potential users, their level of digital literacy is a key consideration. The American Library Association defines digital literacy as "the ability to use information and communication technologies to find, evaluate, create, and communicate information, requiring both cognitive and technical skills." People with limited digital literacy might not be familiar with certain design patterns, calls to action, or icons that those of us with more online experience take for granted. For example, they might not know what "swipe" means in relation to a touchscreen. They may not even know what a touchscreen is. This can affect their confidence and willingness to explore new technology.

How are my users accessing the product or service?

It's important to keep in mind that not all users will access your product or service in the same way due to the cost and availability of devices and internet services. These factors are often due to other broader and historical factors in the markets you might be designing for.

Some users might not have reliable or unlimited access to the internet. This might be because the data they have purchased has run out or because their network coverage is inconsistent or sporadic. As a UX designer, you should try to find ways to take the offline experience into account as well. For more examples of ways you can create a rich offline experience for your users, check out the article [Offline UX design guidelines](#) on web.dev.

Where are my users accessing the product or service?

In some cases, you might be designing a product or service intended for use by people in various locations around the world, which creates some additional considerations, like local languages and cultural norms. Keep in mind that cultures and norms are ever-changing as people integrate and recontextualize technology in their lives, so you'll need to continue to research potential users to identify shifts in user problems, preferences, and usage patterns over time.

Users who speak languages other than the primary language of the product or service you're designing might want or need to switch languages on their device depending on what they're trying to accomplish. For example, a user might want to read in Hindi but type using the English keyboard. Or the user might encounter a concept that cannot be easily translated from one language to another. Designing a multilingual keyboard option, and using universally-recognized icons, like an icon with a local currency sign for a banking app, are just a few key ways UX designers can make it easier for users in different locales.

Assistive Technology

Assistive Technology Overview

- AT includes a wide range of products and systems that improve learning, working, and daily living for people with disabilities.
- Examples of AT range from high-tech devices like computers and smartphones to low-tech solutions like pencil holders.

Key Types of Assistive Technologies

- Color Modification: Enhances screen visibility through high contrast modes, benefiting users with low vision and reducing eye strain.
- Voice Control and Switch Devices: Allow users with limited dexterity to navigate devices using voice commands or alternative input methods.

Screen Readers and Alternative Text

- Screen readers convert on-screen text to speech, aiding users with limited vision by reading text and interactive elements aloud.
- Alternative text (alt text) describes images for users who cannot see them, providing context and improving accessibility.

Additional Resources for designing for accessibility

You're starting to understand the importance of accessibility—designing products, devices, services or environments for people with disabilities. Accessible designs allow users of diverse abilities to navigate, understand, and use your product.

One way to better empathize with your users who identify as having a disability is to experiment with assistive technologies—which includes any product, equipment, or system that enhances learning, working, and daily living for people with disabilities.

When you're designing digital experiences like websites and apps, it's important to become familiar with the types of assistive technologies (ATs) that people might use to access it. Nearly all devices—especially computers, tablets, and smartphones—on the market today include some type of accessibility support. As a UX designer, it'll be important to become personally familiar with many types of the ATs covered in the video [Assistive technology](#), so that you can provide easy-to-use and enjoyable user experiences for those users who depend on them to experience your product.

Different device types and operating systems have different accessibility features available, and those features are updated all the time! The best way to learn about what's available on the device you're using right now is to check the Help. Here are a few links to get you started:

- [Google Accessibility](#) is a YouTube playlist that includes general information about various assistive technologies and how-to videos for using accessibility features in Chrome and on Chromebooks. If you're using a Chromebook, there's some additional guidance in the [Chromebook Help](#). If you're an Android user, you can learn how to use accessibility features in the [Android Accessibility Help](#).
- Microsoft's guide for [accessibility features on Windows](#) includes descriptions of all available features, along with links to how-to content for using accessibility features on a Windows device.
- For Apple products, there's [Get started with accessibility features on Mac](#) and the [Accessibility Support page for iPhone](#).

Learn more about accessibility from Google

If you're ready to learn more about accessibility, check out this three-part series from Google UX researchers about building globally accessible products.

1. [Designing for Global Accessibility, Part I: Awareness is everything](#) outlines how you can increase your awareness of accessibility issues and check your assumptions about users.
2. [Designing for Global Accessibility, Part II: Context matters](#) explores why it's critical to consider logistics during the design process, in order to expand your app's usability and usefulness.
3. [Designing for Global Accessibility, Part III: Be inclusive by default](#) discusses how UX designers can make tactical decisions to create inclusive apps.

You can also start to familiarize yourself with design principles that keep accessibility front-and-center by reviewing [Accessibility Design for Google Material](#). Don't worry if the topics outlined in this guide are advanced or unfamiliar. We'll cover some key considerations for accessible designs in more detail as you progress through this certificate program. For now, simply focus on laying a foundation for designing with accessibility in mind. As you progress through the certificate program, you'll complete activities that will continue building your knowledge and experience with designing for accessibility.

You're starting to understand the importance of accessibility—designing products, devices, services or environments for people with disabilities. Accessible designs allow users of diverse abilities to navigate, understand, and use your product.

One way to better empathize with your users who identify as having a disability is to experiment with assistive technologies—which includes any product, equipment, or system that enhances learning, working, and daily living for people with disabilities.

When you're designing digital experiences like websites and apps, it's important to become familiar with the types of assistive technologies (ATs) that people might use to access it. Nearly all devices—especially computers, tablets, and smartphones—on the market today include some type of accessibility support. As a UX designer, it'll be important to become personally familiar with many types of the ATs covered in the video [Assistive technology](#), so that you can provide easy-to-use and enjoyable user experiences for those users who depend on them to experience your product.

Different device types and operating systems have different accessibility features available, and those features are updated all the time! The best way to learn about what's available on the device you're using right now is to check the Help. Here are a few links to get you started:

- [Google Accessibility](#) is a YouTube playlist that includes general information about various assistive technologies and how-to videos for using accessibility features in Chrome and on Chromebooks. If you're using a Chromebook, there's some additional guidance in the [Chromebook Help](#). If you're an Android user, you can learn how to use accessibility features in the [Android Accessibility Help](#).
- Microsoft's guide for [accessibility features on Windows](#) includes descriptions of all available features, along with links to how-to content for using accessibility features on a Windows device.
- For Apple products, there's [Get started with accessibility features on Mac](#) and the [Accessibility Support page for iPhone](#).

Learn more about accessibility from Google

If you're ready to learn more about accessibility, check out this three-part series from Google UX researchers about building globally accessible products.

1. [Designing for Global Accessibility, Part I: Awareness is everything](#) outlines how you can increase your awareness of accessibility issues and check your assumptions about users.
2. [Designing for Global Accessibility, Part II: Context matters](#) explores why it's critical to consider logistics during the design process, in order to expand your app's usability and usefulness.
3. [Designing for Global Accessibility, Part III: Be inclusive by default](#) discusses how UX designers can make tactical decisions to create inclusive apps.

You can also start to familiarize yourself with design principles that keep accessibility front-and-center by reviewing [Accessibility Design for Google Material](#). Don't worry if the topics outlined in this guide are advanced or unfamiliar. We'll cover some key considerations for accessible designs in more detail as you progress through this certificate program. For now, simply focus on laying a foundation for designing with accessibility in mind. As you progress through the certificate program, you'll complete activities that will continue building your knowledge and experience with designing for accessibility.

User-centered design and assistive technology

As you've been learning, user-centered design means trying to solve problems that people commonly experience rather than trying to solve only those problems that you experience personally. You've also been learning that good user-centered design incorporates the assistive technology, or AT, that many people use to interact with their devices. AT works in things such as color modification, voice control, switch devices, and screen readers.

While assistive technologies are often created to support people with disabilities, they're also used by many people who don't have disabilities or who don't identify as having disabilities. For example, consider the technology that allows someone to pinch a smartphone screen to expand an image or piece of text. That technology is used both by people who have visual impairments and by people who don't.

But when exactly do UX designers incorporate assistive technologies into their designs? The answer is straightforward: Effective UX designers consider assistive technology throughout the design process, from understanding users' experiences, to identifying users' needs, to designing and testing solutions.

Check out the following examples.

Color modification

First, consider assistive technologies for color modification. A UX designer is creating a job-application form that users can access and complete on their mobile devices. During the early phases of the design process, the designer tries to understand how users might experience the form on a variety of devices. The designer discovers that some users use both light-mode settings and dark-mode settings to comfortably see and use their devices, switching back and forth depending on their surroundings and the application they're using.

Based on this information, the designer plans to include a "light mode/dark mode" toggle in the application form itself so users can easily select how they want to view the application form. This feature minimizes the risk that certain users will miss key instructions or interactive features, like text-input fields and buttons.

Switch devices

Now consider an example where a team has to redesign a product after forgetting to account for switch devices. (Remember that a switch device is a technology that replaces a keyboard or a mouse. Switch devices enable people to interact with devices without using one or both of those pieces of hardware.)

A UX design team is working on a new website for a local restaurant. The team finishes its first prototype, which allows test users to simulate navigating the live website. One user reports that they can't use their mouse to navigate the prototype. Keyboard navigation is an answer to that problem: It's a common switch technology that enables users to navigate websites and apps strictly with their keyboards, so they don't have to scroll and click with a mouse.

The principles of user-centered design demand that websites support keyboard navigation. And in many places, laws and regulations require the same! This means the design team must return to an earlier phase of its design process and re-work its

prototype to support that switch device. The team could have avoided this re-work if it had used the early phases of its process to better understand how its users use switch devices.

Voice control

Now consider voice control technologies, which enable people to interact with products by using their voices rather than mouses, keyboards, or touch screens. For example, a UX designer is creating a vocal user interface, or VUI, for a smart thermostat. The VUI will enable users to interact with the thermostat by speaking.

At the very beginning of their process, the designer researches how users interact with similar voice control technologies: The designer observes people interacting with other smart thermostats to get a sense for how different users express the same commands. With this information, the designer creates a VUI that enables people to use multiple questions or commands to achieve the same tasks, like lowering the temperature or turning the thermostat off and on.

Screen readers

Finally, consider user-centered design and screen readers. Screen readers read the text on a screen. They also read alternative text, or alt text. Alt text is text that describes non-textual elements of a screen, such as images and graphics. Screen readers read alt text aloud so users can understand the screen's non-textual elements and how they fit with the screen's textual content.

When designing with screen readers in mind, it's crucial to consider your users, determine which images they'll find meaningful (rather than merely decorative), and then create clear alt text to describe those visuals. With clear alt text in place, users can get value out of your product's images even if they have visual impairments or low-bandwidth connections that make it difficult for images to load.

Grow through daily observations

If you haven't already, start observing how you use assistive technologies to interact with everyday products. Do you ever turn on closed captions while streaming a movie? Ask a smart speaker to play your favorite song? Or use the tab key to move from one text-input field to another? If so, you've used assistive technology. The next time, stop to consider how the designer incorporated that technology into their design process. Over time, these small observations can help you grow into the user-centered designer you want to be!

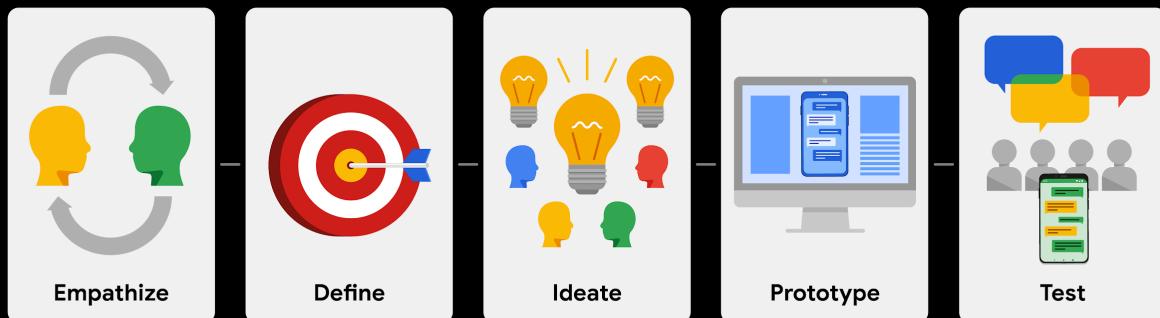
Module 3: Joining Design Sprints

Design Thinking: A UX Design Framework

In the world of UX design, a framework is a conceptual tool that provides guidance on the best practices and processes for solving problems and building solutions that solve the problems of real users. Frameworks provide structure for the design process and foster collaboration, which can spark innovations. Most UX designers follow a specific framework or process when approaching their work, from the first idea all the way through to the final launch of a product.

In this certificate program, you'll follow the design thinking framework to sequence the assignments that contribute to the designs that you'll create throughout the program. The design thinking framework is a user-centered approach to problem-solving that includes activities like research, prototyping, and testing to help you understand who your user is, what their problems are, and what your design should include.

The design thinking framework involves the following phases: empathize, define, ideate, prototype, and test.



Though it may sound like a linear process, the design thinking framework should be iterative, which means that you'll repeat certain phases as you refine your designs. For example, depending on the feedback you receive during testing, you might need to conduct additional research, brainstorm new ideas, or develop new prototypes.

Let's look at the five phases of the design thinking framework to learn more about which activities you'll perform during each one. Keep in mind that the design thinking framework as presented here is an idealized model for UX designers to follow, so you might see some variation in its implementation between different companies, teams, or projects.

Empathize

During the empathize phase, your primary goal is to learn more about the user and their problems, wants, and needs, and the environment or context in which they'll experience your design. The most important part of the empathize phase is to step away from your assumptions and guesses and let your research findings inform your decision-making in later design phases.

Your user research might include user surveys, interviews, and observation sessions, and you might also need to conduct some research on the competitors' products to determine how your user frames competitors' products as part of their daily life and daily problem-solving.

Define

In the define phase, you'll analyze your research findings from the empathize phase and determine which user problems are the most important ones to solve, and why. This will drive you toward a clear goal for the design of the product.

The most important outcome of this phase is a clear problem statement, which is a description of the user's need that your designs will address. You might also develop a value proposition, which is a summary of why your user would or should use the product or service that you're designing.

Ideate

After you land on a user problem and establish why it's an important one to solve, it's time for the ideate phase. The goal of ideation is to come up with as many design solutions as possible—don't settle for your first solution because the most obvious solution is not always the right one.

Ideation involves collaborative brainstorming with other members of your team to generate as many solutions as possible to a problem. This could include marketing, engineering, product management, or any other stakeholders for the product or service. During brainstorming sessions, you should explore all possible solutions. Don't focus on whether something is a "good" or "bad" idea, just collect as many ideas as you can. The important thing here is to keep this process judgment-free.

After brainstorming, you'll then analyze your potential solutions and start to make choices about which ones are the best options to pursue as prototypes. You might return to user or competitive research to help you narrow down your ideas, and you might also create user flows to illustrate how the user will interact with your solution.

Prototype and Test

After you have an idea of how to solve the problem, you're ready to enter the prototype phase, where your goal is to produce an early model of a product that demonstrates its functionality and can be used for testing. The test phase is critical to developing the right solution to address your user's problem, and an organized approach to testing can help you create exceptional user experiences.

Prototyping and testing are interconnected, which means that you'll test your designs at each stage of prototype development rather than waiting to test until after the working prototype is complete. If the design is too polished the first time you present it to users, you might not get as much feedback. Think about ways to include testing throughout the design process, so that you're iterating your designs based on user feedback instead of other reasons.

For example, you might test the concepts behind your design by presenting users with a simple sketch, wireframe, or a sitemap. Taking what you learned, you might iterate on that design to a more detailed design on paper (known as a low-fidelity prototype) and conduct another round of user testing. At some point, you'll iterate the design again into a working, interactive model using a software program (also known as a high-fidelity prototype) and test that as well. You might also consider testing more than one prototype at the same time to get feedback on multiple solutions, or testing the same prototype on multiple platforms, such as a laptop, tablet, and smartphone.

The goal of testing prototypes is to continue to refine the prototype as you gain insight into whether the design for your product or service is easy to use and solves the user's problem. At some point, you'll finalize a prototype, and then you'll provide it to developers, who will then turn your design into a product.

Key takeaways

The design thinking framework is only one type of framework that UX designers use to organize their approach to designs, often based on the product they're designing and the organization they're working for. No matter which frameworks you use in your career, they all have a few core principles in common:

- Focus on the user.
- Create solutions that address the user's problems.
- Collaborate with teammates across departments.
- Validate your designs.
- Iterate as needed to design the right user experience.

Throughout the rest of the certificate program, you'll learn more about each of the phases of the design thinking framework and complete practice activities to gain more experience with designing user experiences end-to-end.

Resources for more information

For more about the design thinking framework, check out the following resources:

- [Design thinking 101](#) by Nielsen Norman Group
- [The Design thinking Process - An Introduction \(2021\)](#) by CareerFoundry
- [UX Design Process: Everything You Need to Know](#) by Adobe
- [What is Design Thinking?](#) by The Interaction Design Foundation

UX Design Business Requirements

For any UX design project, business requirements come from whatever entity assigns the project. That entity might be a for-profit business, a nonprofit organization, a governmental organization, or something else. But no matter where they come from, business requirements typically include two kinds of information: goals and parameters.

Business goals typically describe:

- The users they want the design to target
- The outcomes they want the design to achieve
- Their vision for the design's final look and functionality

Business parameters typically describe:

- The project's budget, timeline, and scope
- The specific tools and systems that designers must use or design for
- The requirements and standards the design must meet

Business requirements vary depending on the project and its key players, and they can often be negotiated over the project's lifecycle. And just as these requirements may evolve over the course of the project, so too should they shape designers' execution of the design thinking process in powerful ways. In the empathize phase, for example, UX designers connect with users and gather

information about their needs. This task costs time and money, so it should be conducted in ways that fit the project's schedule and budget.

Here's an example of a UX designer encountering business requirements for a new project. As you learn about design thinking in upcoming readings, you'll explore examples of how this UX designer creates an effective product while meeting business requirements.

A bakery owner is contracting a freelance UX designer to design a new website. The bakery serves customers exclusively through delivery and pick-up orders. Since its founding two years ago, the bakery has advertised and taken orders over the phone and through its social media accounts. This approach has helped the bakery connect directly with customers and build a loyal base without partnering with third-party ordering services.

But as sales have increased, the owner and their team have struggled to individually process orders as they come in through multiple channels. They need a website that will help them maintain a direct connection with customers while enabling them to process orders in a more automated and efficient way.

When they contract with their freelance UX designer, the bakery owner shares their goals and parameters. With a modest budget and relatively short time-frame, they want a simple website that supports online ordering without routing users to third-party ordering services. The site must be easy to navigate, maintain, and update. It must also reflect the bakery's existing brand and appeal to its target customers. While the bakery's customers come from a range of locations and demographics, the majority are 35–70 years old and they live or work in the local area.

These business requirements provide an invaluable starting point for the designer, who reviews them to learn more about their end users, understand their budget and timeframe, and start planning the rest of their design thinking process.

Phase 1: Empathize with Users

You've learned that good UX designers consider business requirements at every stage of the design thinking process. These requirements are set by whatever business or entity assigns the design project. They include crucial details like a business's schedule, budget, and vision for the product that's being designed.



Process flow of design thinking framework: 1. Empathize, 2. Define, 3. Ideate, 4. Prototype, and 5. Test. Empathize is highlighted.

After understanding these requirements, designers are ready to start the first phase of the design thinking process: empathize.

When you empathize with people, you try to deeply understand their feelings, thoughts, and experiences on their own terms, without bias or preconceptions. Empathizing helps designers connect with users, not just as consumers or customers, but as human beings with their own unique histories and situations. This kind of deep connection helps designers create products that solve real problems, address real needs, and engage users in the long term.

Building on business requirements

When empathizing, designers seek to understand how users experience the product they're designing. They want to know their users' problems and needs, and they want a clear understanding of the situations and environments where users interact with the product. The more a designer understands these details, the better equipped they are to create products that truly meet users' needs in the long term.

Some of this user information will likely be included in the project's business requirements, but it may be limited or based on assumptions. That's why good UX designers use the empathize phase to validate, update, and expand on the user information in their project's business requirements. They do this by connecting directly with users and researching their experiences.

Here are some powerful methods for empathizing with users as a UX designer:

Interviews

Interviews take many forms, but UX designers most commonly use four:

1. Questionnaires/surveys
2. In-person interviews
3. Phone interviews
4. Video interviews

Before starting interviews, designers consider the type and amount of information they need. Next, good designers consider their business requirements: how much time, money, and other resources do they have for planning and conducting interviews? Finally, designers can plan interviews that achieve the best balance between their information needs and their project's parameters.

Empathy maps

Once designers have conducted their interviews, they can turn to empathy maps. These are a great tool for processing the information a designer has collected. In a classic empathy map, designers draw directly from interviews to answer five questions about their users:

1. Who exactly are the users and what are their situations?
2. What do users say about their experiences with the product or similar products?
3. What do users think about their experiences?
4. What do users do before, during, and after their experiences?
5. What do users feel about their experiences?

Ideally, the answers to these questions will build on any user information included in a project's business requirements.

For example, in the business requirements you explored in the previous reading, the bakery owner claims their older customers prefer ordering over the phone because they aren't comfortable with online order forms. But the UX designer's empathy research tells a different story: Many older customers are comfortable with online ordering but prefer phone ordering because they think it's faster and feel an emotional connection with the bakery and its staff. In this way, the designer's empathy research has updated and expanded the user information in the bakery's business requirements.

User personas

Personas are fictional characters who represent groups of similar users. They help designers distill large amounts of user information into more manageable chunks.

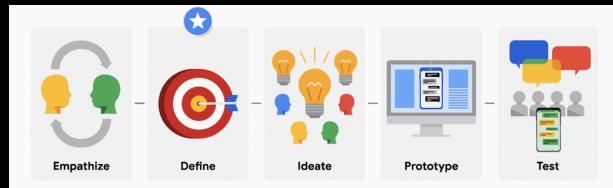
For example, the older bakery customers prefer ordering over the phone for a mix of reasons. But rather than try to remember these details in the abstract, the designer creates a user persona who brings this customer to life:

Berta is an older customer who has built connections with bakery staff over time and enjoys connecting with them while ordering over the phone. Also, she has a visual impairment and finds phone ordering faster and more convenient than ordering online.

Once designers have established personas, they can keep their users in mind throughout the design thinking process without having to remember every detail they captured during their interviews. These personas also help designers explain their design choices to clients and other business stakeholders. Rather than try to describe their users in the abstract, they use user personas to tell compelling stories that put their designs in context.

Phase 2: Define User's Needs

You've learned that effective UX designers typically start the design thinking process only after they've understood their project's goals, parameters, and other business requirements. You've also learned about the first phase of the design thinking process: empathize. Empathizing is all about connecting with users, gathering information about them, and distilling that information into detailed user personas.



Process flow that represents the Design Thinking framework: 1. Empathize, 2. Define, 3. Ideate, 4. Prototype, and 5. Test. Define is highlighted.

After empathizing, designers move to the next phase of design thinking: define. In the define phase, designers analyze their empathy work to answer this key question: Which of my users' needs or problems are the most important ones for my design to address? Typically, designers use a combination of tools to answer this question.

User stories

While a user persona distills a large group of similar users into a single character, user stories help designers focus their understanding of those users even more. A user story is a one-sentence narrative told from a persona's perspective. It should encapsulate who the user is, what they want to do, and why they want to do it. The following is a simple template for writing a user story:

As [type of user], I want to [action] so that [benefit].

When done well, a user story gives the designer information they can use to create a checklist they can return to as they define their users' needs and ideate effective solutions. For example, recall Berta, one of the user personas in the bakery example you've been exploring. For Berta, the UX designer might develop a user story like this:

As a long-time customer with a visual impairment and a close connection to the bakery staff, I want to place my orders over the phone so I can order with ease and continue to connect with staff members.

User journeys

Once a designer has distilled their user groups into realistic personas and stories, it's time to start mapping out each persona's user journey. A user journey is a series of experiences that the user has as they try to achieve their goal. It might be an experience they have with the product that's being designed, an experience they have with a similar product, or an experience they have in the absence of those products.

In developing the new bakery website, for example, the UX designer creates two user journeys for each persona, including Berta. One of Berta's user journeys reflects how users like her typically interact with the bakery and its current ordering systems (a mixture of phone ordering and direct messages on social media accounts). The other user journey reflects how users like Berta will typically interact with website-based ordering systems, which is the type of product the designer is creating.

Problem statements

With complete user journeys for each persona, a designer can better identify the problems their design must solve or the needs their design must address. Then, they can distill these problems or needs into problem statements.

A problem statement summarizes who the user is, what they need from a design, and why. The following is a simple template for writing a problem statement:

[Name of user persona] is a [type of user] who needs [type of user experience] because [benefits of user experience].

This template is similar to a user story, but problem statements are typically more detailed, and they are written from the designer's perspective. For example, here's a problem statement for Berta:

Berta is an older person with a visual impairment. She is a long-time bakery customer who prefers ordering over the phone. She needs a website and online ordering system that are easy to use, adapt to her vision needs, and mimic the feel and flow of a friendly phone conversation. She wants to place her orders with ease and feel like she's making a personal connection with the bakery.

Effective UX designers create problem statements for each of their user personas. This helps designers create products that address the needs of multiple user types rather than catering solely to one type of user.

Phase 3: Ideate Solutions

The ideate phase is all about getting creative and brainstorming lots of potential solutions. Designers often collaborate with team members, business stakeholders, and potential users. Their ideas may be unexpected or out of the box, and that's great!

Early in the ideate phase, good designers try to suspend their assumptions, preconceptions, and judgements: The goal is to propose, consider, and challenge as many alternatives as possible without evaluating or selecting any one. Evaluation and selection come in later in the ideate phase: Once plenty of ideas are on the table, designers have a better chance to compare alternatives and select the best.

As you'll learn in a later course, there are many, many different techniques for brainstorming, and the best UX designers choose, adapt, and create new techniques as needed. For now, here are some of the most common:

“How might we?”

In this brainstorming exercise, designers take a problem statement from the define phase and turn it into a list of questions that start with “How might we,” or HMW. HMW questions help designers reframe user problems as exciting opportunities for solutions. For example, recall the problem statement you explored in the previous reading defining user needs:

Berta is an older person with a visual impairment. She is a long-time bakery customer who prefers ordering over the phone. She needs a website and online ordering system that are easy to use, adapt to her vision needs, and mimic the feel and flow of a friendly phone conversation. She wants to place her orders with ease and feel like she's making a personal connection with the bakery as she places her orders.

If the bakery's UX designer reframed this problem statement as a series of HMW questions, they might include:

- How might we make the online ordering process easy to use?
- How might we make the online ordering system mimic a friendly conversation?
- How might we ensure the online ordering system adapts to Berta's vision needs?

After creating these HMW questions, good UX designers spend time answering them with as many possible solutions as they can think of—and they don't hold back!

Rapid Sketching

While “How might we?” focuses on written questions and solutions, Rapid Sketching is a visual approach to ideation. (It's commonly called “Crazy Eights” in the UX design industry.) Rapid Sketching is especially useful when designers need to brainstorm the visual elements of a new design. First, designers clarify the problem they're trying to solve or the idea they're trying to iterate. They might use one of the questions or solutions they developed in a HMW exercise. Then, they:

1. Divide a large sheet of paper into eight squares.
2. Grab something to draw with.
3. Start an eight-minute timer.
4. Take one minute to sketch an idea or solution in each square.

When the eight-minute timer goes off, there should be a different sketch in each of the paper's eight squares. Designers can adapt this approach as needed. For example, if a designer has less time or smaller sheets of paper, they might start with four squares and four minutes for sketching.

Competitive audits

When designers want new ideas about how to solve a problem, they can also audit their competitors by asking questions, like:

- What products do they offer?

- What are those products' strengths and areas for improvement?

By answering questions like these, designers can get inspiration for their own designs, identify gaps in the market, and find evidence for what designs have already worked and not worked. With audits, designers can save time, money, and effort by learning from competitors who have already designed similar products or tried to solve similar problems.

SCAMPER

SCAMPER is a technique designers used to brainstorm changes and alternatives to ideas and designs. Each letter of the acronym stands for a different action that designers can apply to their designs, such as substituting (S) elements for other elements, combining (C) elements into one, or adapting (A) elements with alternatives. In full, the acronym stands for: Substitute, Combine, Adapt, Modify, Put to another use, Eliminate, and Rearrange.

Collaboration

Ideation typically works best when it's collaborative. Effective design teams often ideate together in collaborative working sessions. And whether they're working alone or in a team, designers often bring other players into the ideation process, including their users and their business stakeholders.

Before launching a collaborative partnership or working session, effective designers or design teams typically ensure they've answered crucial questions such as:

- Who will be involved? What will their roles be?
- Where will the collaboration happen? Will it be in person or virtual?
- Why is the collaboration happening? What is the end goal?
- How will the collaboration happen? What tools and processes will we use?

Business requirements

Ideation techniques help designers brainstorm lots of ideas, but will those ideas meet their project's business requirements? As designers review their ideas, they must refer to their business requirements and ask questions like these:

- Which of these ideas will be feasible within the project's budget and schedule?
- Which of these ideas will best meet the standards for the design?

While ideation starts with exploring boundless possibilities, there will always be firm parameters for a project. Good UX designers often try to frame these parameters positively: They are obstacles that inspire creative problem solving, guardrails that keep the design process on track, and filters for sifting through all those boundless possibilities.

Phase 4: Prototype Solutions

When a designer has empathized with their users, defined their users' needs, and ideated solutions, it's time to start the fourth phase of design thinking: prototyping solutions.



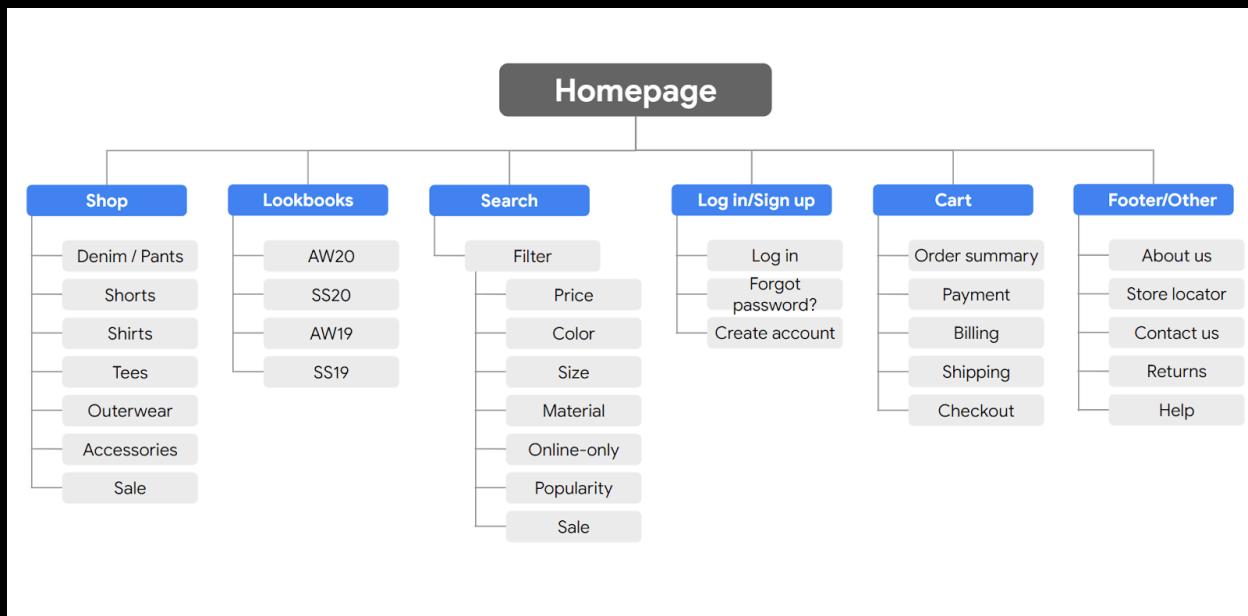
Process flow that represents the Design Thinking framework: 1. Empathize, 2. Define, 3. Ideate, 4. Prototype, and 5. Test. Prototype is highlighted.

In the prototyping phase, the goal is not to build a final product. Rather, designers produce early models, or prototypes, of the solution so they can see how it will look and function for users. Prototypes also show stakeholders and potential users what the design can do. So, how do designers prototype? There are many practices they can use.

Information architecture and sitemaps

To meet users' needs, products like web apps must present information in ways that users can understand and navigate with ease and enjoyment. When designers organize the information in a product, they create something called "information architecture," or IA. Information architecture is essentially a high-level diagram or flowchart that shows how users can move through a product, like a website or an app.

In planning a product's information architecture, designers often create something called a sitemap, like this one for a website:



Shop with seven subcategories below; Lookbooks with four subcategories; Search filters includes price, color, size, material, online-only, popularity and sale; Log In/Sign up includes forgot password and create account; Cart with five subcategories; and Footer/Other which includes general information about the business and help.

Like all good information architecture, this sitemap organizes the product by outlining its hierarchy and sequence:

- Hierarchy refers to how topics are prioritized and subordinated. Hierarchies emphasize topics that are broader or more important, which in turn contain smaller or less important topics. In the sitemap above, for example, “Shop” is a major topic that contains smaller topics, like “Denim/Pants.”
- Sequence refers to the order in which users can navigate through the product’s hierarchy, like navigating from the “Homepage” to “Shop” to “Denim/Pants” and so on.

Information architecture and sitemaps are crucial for meeting users’ needs. For example, recall the designer who is developing a website and online ordering system for a bakery. One of the designer’s user personas is an older customer who prefers phone ordering because they enjoy talking with bakery staff.

So, the designer aims to create a website and ordering system that replicate the experience of ordering over the phone. The design’s success will depend in large part on its information architecture. In creating the website’s sitemap, for instance, the designer uses hierarchy and then sequences information so that users enter the homepage and immediately see an option to “Place an Order,” just as they might be invited to place an order after being greeted by bakery staff over the phone.

Wireframing

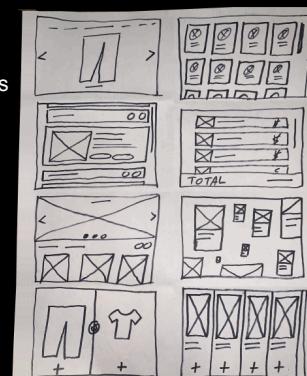
Wireframes are rough sketches of the product that bring the sitemap to life. Designers use them to figure out how the product’s pages are laid out, how each page’s elements are arranged, and how users will progress from page to page. They are relatively bare bones, consisting primarily of shapes, lines, and minimal text. There are two methods designers can employ:

Paper wireframes

Paper wireframes are sketches on paper. They use horizontal lines to represent text, rectangles or boxes to represent icons or images, and other shapes to represent buttons and additional elements. It’s easy and inexpensive to iterate many versions with paper.

Digital wireframes

Digital wireframes are developed in a UX design tool such as Figma or Adobe XD. Digital wireframes are 2D designs that show, at a high level, what the product will look like. Designers use grayscale, shapes, and placeholder text to demonstrate what the design will look and feel like when content is added. (On a fun side-note: Lorem ipsum is a form of placeholder text that is so common that many designers like to play around with it for fun, to inspire creativity. Check out [Meet the Ipsums](#) to explore.)

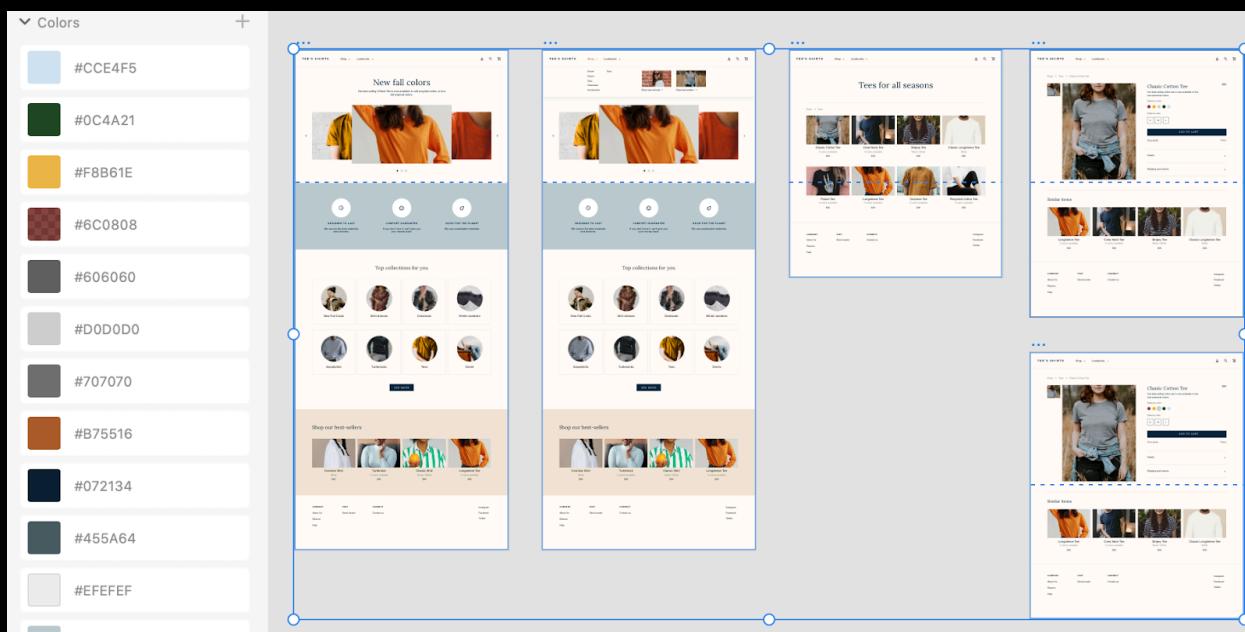


Low fidelity (lo-fi) prototypes

In UX, “fidelity” means how closely a design matches the look and feel of the final product. A low fidelity prototype is a simple interactive model that provides a basic idea of what the product will look like and how its components will flow for users. Designers often create lo-fi prototypes by assembling their wireframes and adding interactivity, or the ability to navigate from one screen to another. Designers use lo-fi prototypes to test and improve their designs before spending time and effort developing more detailed high-fidelity prototypes.

High fidelity (hi-fi) prototypes

A high fidelity prototype takes the lo-fi prototype and brings it as close to the final product as possible. Hi-fi prototypes incorporate all of the product’s components, interactivity, and content, though some content may be represented by realistic placeholders. It is not the final product, but it enables people to more fully experience how the product will look, feel, and work. For example, consider the richly detailed hi-fi prototype for Tee’s Shirts below. More than just an assembly of navigable wireframes, this hi-fi prototype will enable testers and stakeholders to simulate a realistic experience with the final product, which means richer and more detailed feedback for designers on every facet of the final product.



During prototyping, whether lo-fi or hi-fi, designers often revisit information and decisions from earlier stages of the design thinking process. When evaluating prototypes, for example, they should ask if the layout, flow, look, and feel address the problem statement developed during the define phase. Would Berta, the bakery customer persona you met earlier, be able to easily use the site to order? Does the site give her the personal experience she’s used to and looking for? These are all things for the bakery’s UX designer to consider when taking a critical look at prototypes.

Prototyping and testing

You've read about designers creating prototypes so people can experience what the product will look and feel like. If you think that sounds like testing, the next phase of the design thinking process, then you're right: prototyping and testing are deeply interconnected. In the next reading, you'll see how these phases work in tandem. Keep exploring to find out what happens next!

Phase 5: Test Solutions

Think back to the bakery example from previous readings. The UX designer organized the content and visuals of the website with information architecture and a sitemap. Then, they went through iterations of wireframing, eventually creating a low-fidelity prototype and then a high-fidelity prototype.

At some point in the prototyping phase, designers typically start testing their prototypes and making improvements. Effective testing aims to reveal what users think, feel, and experience as they use a product, such as a website or an app. To get rich and unbiased results, good testing starts with a plan. Let's briefly explore the key elements of UX testing by considering the who, what, when, where, why, and how of a testing plan:

Who will participate in the tests? Early on, designers might ask friends, colleagues, design partners, or other informal participants to test a product and offer feedback. Later on, ideal participants include real-life users who align with the project's user personas.

What types of tests will be conducted? In upcoming courses, you'll learn more about different types of UX research and UX tests, including the kinds of information they help designers collect.

When and where will the tests be conducted? Tests can be conducted in person or virtually, in a range of different environments or communication channels. It all depends: Good UX designers plan tests that achieve the best balance between their needs and their project's business requirements.

Why are the tests conducted? UX tests are conducted for a range of reasons, but the core goal is always to understand users and improve their experiences. During the test phase of design thinking, some of the most common reasons for testing are to:

- Validate ideas, information, or decisions from other parts of the design thinking process, such as user information generated during the empathize phase or design decisions made during ideation.
- Uncover usability issues to address with further iteration and prototyping. Users experience these issues as pain points that prevent them from using the product and achieving their goals with ease and enjoyment.

How will participants engage with the prototype? Here, a key consideration is whether the testing process itself is inclusive and accessible for all participants. As you'll learn, effective testing incorporates assistive technologies and other inclusive elements to ensure all participants can engage fully.

How will information be collected? Designers use a range of methods to collect information from users, including observation and interviews. They may also be able to gather information from the prototype itself or the systems that participants use to interact with the prototype.

For the bakery, the UX designer tested a low-fidelity prototype and then a high-fidelity prototype with a range of users who aligned with the project's key user personas, including Berta. Through user feedback, the designer discovered key ways to improve the website and better meet users' needs. With some time and further iteration, the designer eventually created a successful design that met his client's business requirements while also creating an easy and enjoyable experience for users. Now it's time for some pastries!

More about Sprints

If you're looking for a deeper dive into design sprints, here are some resources for you. The Google [Design Sprint Kit](#) is an open-source resource for anyone learning about or running design sprints. The website includes [case studies](#) about design sprints that have solved all kinds of challenges, [templates for decks and activities](#), and more.

In addition, check out this [article on Medium about the importance of design sprints](#). Or, to be really inspired, read the book [Sprint](#) by the creator of design sprints and former Googler, Jake Knapp. Pay special attention to the chapters "Start at the End," to get an overview of how to establish long-term goals for a sprint, and "Liftoff," to motivate you to get started with your first sprint.

An entry-level designer's role

You might also be curious to learn about an entry-level UX designer's role in a sprint. We've got the inside scoop for you. Check out this post from the INKONIQ BLOG about [how a design sprint works at Google](#) and this article on Medium about [what one UX designer learned from their very first design sprint](#).

Design sprints and the design thinking framework

You may have observed that the design thinking framework and design sprints are both organized into five similar phases, and they both promote collaboration, user-centered design, rapid prototyping, and iterative testing. However, there are some distinct differences.

The design thinking framework:

- Is an overarching framework with five phases: Empathize, Define, Ideate, Prototype, and Test
- Is an overall philosophy for approaching problem solving
- Spans the entire product development process and is open-ended
- Utilizes many different methods and tools

A design sprint is:

- A time-bound process with five phases: Understand, Ideate, Decide, Prototype, and Test
- A specific implementation plan for solving a specific design challenge
- Strictly timebound from start to finish, typically spread over five full business days
- One method with a defined process

Using design sprints to align to the design thinking framework

Design sprints are an efficient and effective way to keep aligned with the overall goals of the design thinking framework. Since a design sprint typically lasts five consecutive days, it compresses the design thinking process into a focused, intense period of ideation, prototyping, and testing.

Below are some examples of how design sprints can be used to accelerate specific design challenges throughout the design thinking framework.

Empathize

During the empathize phase, the design thinking framework focuses on understanding the users and their needs. Design sprints can be deployed in this phase to quickly research user behaviors and preferences, conduct interviews with users, and analyze customer feedback to understand pain points and opportunities for improvement.

Define

Design sprints during the define phase might focus on refining the problem statement, aligning stakeholders, analyzing the user journey, and generating ideas that specifically address the pain points identified in the previous sprint. This focused approach helps lay the groundwork for the following phases of prototyping, testing, and implementation within the design thinking framework.

Ideate

In the ideate phase, design sprints can be employed to rapidly generate and evaluate ideas. The time constraints and structured activities of the design sprint can help teams generate a large volume of ideas within a short timeframe.

Prototype

The prototype phase is where design sprints find their strongest application. Design sprints excel in creating prototypes that can be tested and validated, and the design sprint approach allows teams to quickly translate ideas into a visual or interactive prototype that represents the potential solution.

Test

Design sprints integrate seamlessly into this phase by providing a structure for conducting user testing sessions and collecting feedback on the prototypes developed during the sprint. The insights gained from testing inform further iteration and refinement.

Common Retrospective Questions

Every design sprint is an opportunity for the team to learn something new. Design sprints are especially useful for entry-level UX designers joining a design sprint for the first time.

During a design sprint, the focus is on:

- Understanding the design challenge
- Ideating solutions
- Deciding which solutions to build
- Prototyping a few solutions

- Testing those prototypes

Immediately following a design sprint, the team should hold a retrospective. A retrospective is a collaborative critique of the design sprint process.

Collaborative critiques play an essential role throughout the Design Thinking process, particularly during the prototyping and testing phases. These critiques focus on improving the design solution itself, considering factors like usability, visuals, and alignment with user needs.

A design sprint retrospective is also a feedback-oriented activity within the Design Thinking process, but it has a different goal. The goal of a design sprint retrospective is to make sure everyone who took part in the sprint has the chance to give feedback and think about opportunities for improving the process.

The key questions to ask during a retrospective are:

1. What went well?
2. What can be improved?

Answering these questions will help the individuals and the team work better. It is important for everyone to feel empowered to share their experiences and to know that personal identifiers, like race or gender, don't prevent members from being honest. Before a retrospective begins, remember that any feedback provided will be used to reflect on the experience and improve the process for the next sprint.



What went well?

Retrospectives usually start with discussion on the parts of the design sprint that were successful and areas in which the team did well. Maybe a new process was created that could be applied to future sprints. Or maybe the addition of a new digital tool enhanced the team's productivity. Analyze the team's wins, and think about how they could be applied to future sprints.

Questions a UX designer might ask during this part of the retrospective include:

- Which tools saved me the most time and effort?

- When did I feel the most satisfaction?
- What helped me make my best contribution to the team during this sprint?

This is also a good time to acknowledge a team member's strong performance. Celebrating successes builds relationships and increases cohesion and harmony within the team.



What can be improved?

After highlighting everything that went well, it's time to shift gears and think about areas for improvement. The team will want to know what went wrong, so that everyone can do better next time.

Retrospectives are opportunities to encourage everyone to participate in sharing areas for improvement. Each individual might even take turns going around a circle and adding challenges to a shared list. If anyone is nervous about speaking up, each person can be invited to write their thoughts anonymously. Then, all of the improvements can be reviewed together.

This process eliminates concerns about causing offense and reduces the chance of groupthink. Groupthink can occur in a group discussion when one person shares an opinion and everyone immediately agrees with the opinion, instead of sharing their own feelings about a topic. Groupthink prevents each person from having an equal say, and it might mean certain areas for improvement are overlooked.

Consider each phase of the design sprint to structure the feedback: understand, ideate, decide, prototype, and test. At what point were there missteps? What caused those challenges? Share individual perspectives if a phase or two didn't go according to plan.

Questions a UX designer might ask during this part of the retrospective include:

- What went wrong that caught me off guard?
- Which problems came up the most often?
- When do I think we experienced the biggest challenge as a team?

Then, a designer examines the sprint's outcome or final product, and ask questions like:

- Did the team overestimate or underestimate the work required to complete the design?

- Did an external factor derail my productivity?
- Most importantly, does the final design actually solve the user problem?

Identify ways that the team could have ended up with a better solution.

Keep in mind, retrospectives are about empowering—not shaming. This is not the time to call out an individual for poor performance. If there are issues with a team member's work, it's best to address it with that person privately, not during a team-wide retrospective.



Lessons learned

By the end of the retrospective meeting, the team will have a better understanding of what went well and what could be improved. Naturally, they'll want to take lessons learned into their next design sprint.

Before the next sprint, the team reviews the conclusions reached at the end of the last retrospective. The conclusions should inform how they conduct the next sprint. Perhaps they need to include a more diverse team, allow more time for ideating, or test with additional users before moving forward with a design.

Questions a UX designer might ask include:

- What did I discover during the sprint that I'm still wondering about?
- How could the current process be holding the team back from creating better solutions?

Module 4: Introduction to the Portfolio Project

As you complete courses in this certificate program, you'll create a complete project for your portfolio to show off your work to potential employers. It's a very exciting time because you're about to begin your first design project!

To start, you'll select a project prompt in an upcoming course item. Then, over the next few courses, you'll use that prompt to build a mobile app design. Later on in the certificate, you'll use that same prompt to build a responsive website.

Everything you create during the activities of this program will be included in your portfolio. Be sure to take the courses of this certificate program in order, so that you'll follow the steps of the design process and create all of the artifacts you'll need for your portfolio.

Choose a prompt

You might be thinking, there are so many products I want to design! How will I ever choose? To help narrow the scope, you'll choose a prompt that will give you more specific guidelines.

To review possible prompts and select one to work on, you have two options:

1. Coming up, you can review and select from a list of twenty-five prompts curated by the creators of the Google UX Certificate.
2. Or you can review and select from Sharpen, an online tool that creates randomized design prompts.

These prompts are designed to generate types of products that may resonate with potential employers. Your first project will focus on designing a process within a mobile app to meet the specific need of a hypothetical business or organization, and both the list and Sharpen will give you lots of ideas to choose from.

Two more things to help you get the most out of this first portfolio project:

1. The 25 prompts in the list all align closely with the examples that you'll explore throughout the certificate. So, if you're new to UX design or just looking for a little extra guidance and support, strongly consider selecting a prompt from the list for your first portfolio project.
2. If you already have an idea for a design project in mind, you will have the opportunity to work on the project of your choice in Course 7 of the certificate program. For this first project, please select a prompt from Sharpen or the list presented in the next course item.

Starting your UXD Portfolio

After you choose a prompt, you'll start working on activities that contribute to your final portfolio. The following activities are focused on learning more about your users and competition for your first project, a mobile app:

- Mobile App Personas
- Mobile App User Journey Map
- Mobile App User Problems
- Mobile App Competitive Audit and Report

Build your case study

As you work through Courses 2-6 of the Google UX Design Certificate, you'll collect artifacts for your portfolio case study in a slide deck. A slide deck is a versatile format that can be used to gather, present, and share your work. It is also a widely used format in the professional world. A lot goes into building a strong case study, so it's best to add to it as you complete activities. This way, you can spend more time making sure each slide is ready to impress.

Use the template we provide below to organize and build your case study as you progress through courses. Feel free to customize the template to match your brand. We'll also provide you with reminders each time you should add an artifact to your slide deck. By the end of Course 6, you'll have a complete case study to include in your portfolio website and to showcase during your future job applications!

As a preview, your second portfolio project will be to design a responsive website to compliment a mobile app. The case study template can showcase the assets you create for both mobile apps and responsive websites. If you include both in one case study, you may need to duplicate certain template slides to create space for more assets.

To use the template for the case study, click the link below and select USE TEMPLATE.

Link to template: [Case study slide deck](#).

OR

If you don't have a Google account, you can download the template directly from the attachment below.

Here are some tips to help you use the slide deck template:

Use the instructional language and placeholder shapes on each slide to help guide what content you should include. To replace the placeholder text, select it, then type new text. Remember, this template is just to help get you started, you can change the font and formatting however you like.

To include images of your UX artifacts in your slides, either screenshot or download them to your device. If you're using Google Slides, you can then go to the slide where you'd like to add an image, choose Insert from the top menu, navigate to Image, and select Upload from computer from the dropdown menu. From here, upload the screenshot or downloaded image you want to display.

Explore UX Design Portfolios

In this review, you'll explore example portfolios from entry-level UX designers at Google. You'll consider what you like about these portfolios and why. This will help you start to think about how you'll design your own portfolio website in the future!

Keep in mind, there's no "right" way to build a portfolio. Every designer, recruiter, and client has a different idea about what should be featured in a UX design portfolio. Examining lots of portfolios will give you ideas and inspiration to apply to your own portfolio.

To review example portfolios from entry-level UX designers at Google, explore the links below. You can review them independently and at your own pace, but if you want to do a more formal review process, follow the steps below. This process will help you take notes you can use to design your own design portfolio later.

Access the template

There is a portfolio comparison template available for you to use when reviewing design portfolios.

To use the template for this course item, click the link below and select USE TEMPLATE Link to template: [essentials of a good portfolio template](#).

OR

If you don't have a Google account, you can download the template directly from the attachment below.

If you would like to learn more about working in word processing programs in order to complete this activity, check out the [Resources tab](#) on the left side of the screen.

Choose portfolios to examine

Review the following list of entry-level UX designers. If you are using the template to review and take notes, choose three portfolios from this list, and copy and paste the portfolio URL into the first column of the template.

- [Lisa](#)
- [Shabi](#)
- **[Josh](#)**
- **[Kartik](#)**
- [Tongfan](#)
- [Penny](#)
- [Yobi](#)
- [Onye](#)
- [Oleana](#)
- [Sharon](#)

Use questions to guide your review

Consider the following questions as you review each portfolio. If you are using the portfolio comparison template, answer the questions in the template for each portfolio that you chose to review. Then, in the column to the far right, share which portfolio stood out to you in each category and why.

First, how does the portfolio establish the designer's personal brand? What type of first impression do each of these three designers make?

A designer's personal brand is how their personality, unique skills, and values intersect with their public persona. It's the first impression a designer makes! A personal brand should clearly demonstrate who the designer is and what makes them and their work interesting.

Second, Is the navigation simple and intuitive?

The navigation is the way users get from page to page on a website. Users should be able to reach the homepage from any part of the site. And the navigation should lead them from one project to the next. It should also be easy for users to navigate to a contact page that includes an email address, a copy of a resume, and links to other professional social media accounts.

Third, does the portfolio website go beyond the template?

Although a website builder's pre-designed layouts make it easy to get started, effective designers go a step further. Portfolio designers can customize their websites to align with their brand and the story they want to tell. For example, designers should remove the text that comes pre-loaded in the template, and replace it with their own content. It's also helpful to register their own domain name, so their website's address doesn't contain the name of the website builder.

Fourth, does the portfolio website include a diversity of projects?

Each portfolio should have 3-5 projects that demonstrate the designer's skills. Note whether each portfolio contains a diversity of projects.

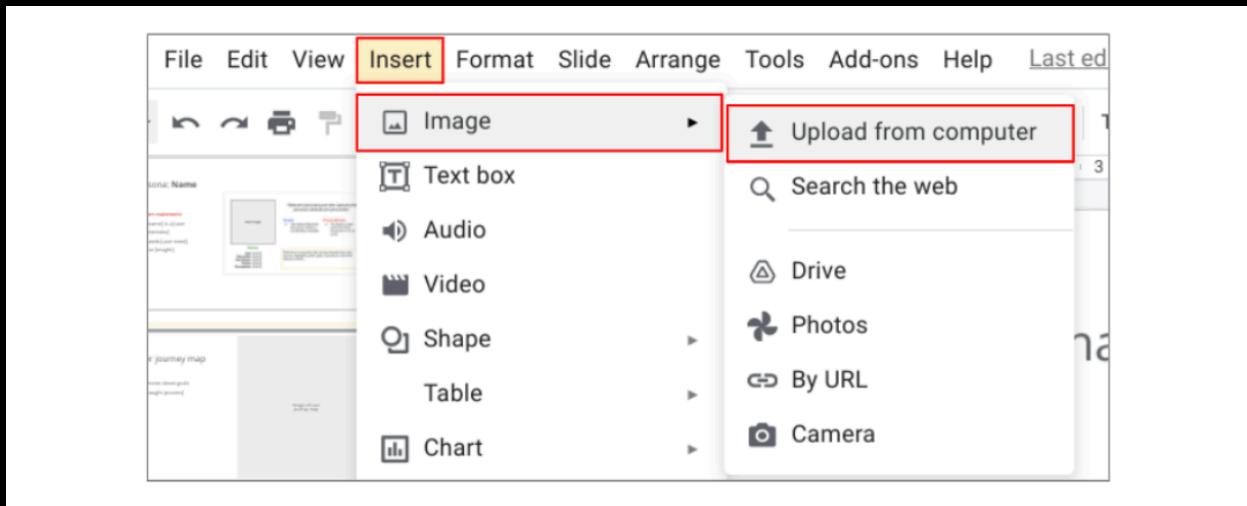
Finally, is the site housing the portfolio responsive?

If you can, access the site on multiple kinds of devices, such as a smartphone and a laptop. If the site is responsive, its on-screen appearance will adjust based on the user's device. So, whether someone engages with the website on a desktop computer or mobile phone, they will have a positive experience.

Summarize and reflect on your observations

After reviewing the portfolios, take a moment to reflect on the following questions. If you are using the template, answer these questions in the space at the bottom of the template.

- Was there an element of the portfolios that you would like to learn more about?
- Did you discover any design element that you would like to include on your own portfolio website?



Resize and place the image however you think it best complements the other content on the slide. Don't forget to delete any placeholder shapes or text from the template.

Revisit these instructions whenever you need, and keep in mind that, just like UX design is an iterative process, building a case study also takes time and multiple iterations. Be patient and thoughtful as you create each slide, and you'll soon have a full case study ready to share with an audience.

Follow the guides

Each course will include a portfolio project guide that focuses on a different part of the process: empathizing with users, defining user needs, ideating on design solutions, creating lo-fi and hi-fi prototypes, and finally testing those prototypes and making refinements.

The guides draw from the rest of the certificate and offers brief refreshers on how to:

- Make key design decisions, like applying visual design principles.
- Complete key design processes, like creating insights from research.
- Access and use key design resources, like user persona templates.

Think of them as a high-level how-to for the entire Design Thinking process. It's meant to be a reference as you complete your portfolio project—or as you tackle your first design projects on the job! Refer to it for reminders and pro tips about some of the most important design principles, tools, and procedures you've explored.

The guides aren't meant to substitute for the rest of the certificate, and it will be most useful for folks who have either completed the certificate in its entirety or who already have significant experience with UX design. You will also be able to download PDFs of the guides at the end of the certificate program so that you can use them to create new projects for your portfolio, even after you receive your certificate.

As you use the guide, you may find yourself wanting deeper reviews of certain topics. If the guide doesn't offer the depth or detail you need, remember you can always return to earlier items in the certificate for more in-depth coverage of key topics. The best UX

designers routinely review old learning experiences because they are committed to continuous improvement in their craft. And improvement sometimes means going back to review foundational knowledge and refresh existing skills.