

A GUIDE FROM OMNISPHERE TECH · VOLUME TWO · UPDATED EDITION

Start with them. Not with you.

User-centered design and assistive technology — the four-step process, the five questions to ask before you draw anything, and the technologies your users are already using to reach you.

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PAGES
EIGHTEEN

READ TIME
ABOUT 28 MINUTES

WHAT IS IN HERE

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A companion volume

Volume one covers **universal, inclusive and equity-focused design** — three approaches to widening who a product serves, and where each one stops. Ask us for a copy.

START HERE

The user comes first — literally.

A **user** is a person trying to solve a problem, looking for a product or service to help them solve it. The **user experience** is the journey they take with that product. Your job is to keep them at the centre of every decision you make.

There are two plain reasons the user sits at the centre rather than you. The first is commercial: the user is the one who buys and uses the product, so they are the one who decides whether building it was worth doing. The second is about accuracy. Designing for problems people commonly experience — rather than only the problems you happen to experience yourself — is what reduces designer bias.



“There is no substitute for personally watching and listening to real people.”

Larry Page, co-founder of Google. The line became one of the company’s core values: focus on the user and all else will follow.

That word *personally* is doing the work. Reading a research summary is not the same as watching someone fail to complete a task in front of you, and no amount of analytics replaces the moment you see where a person actually stops.

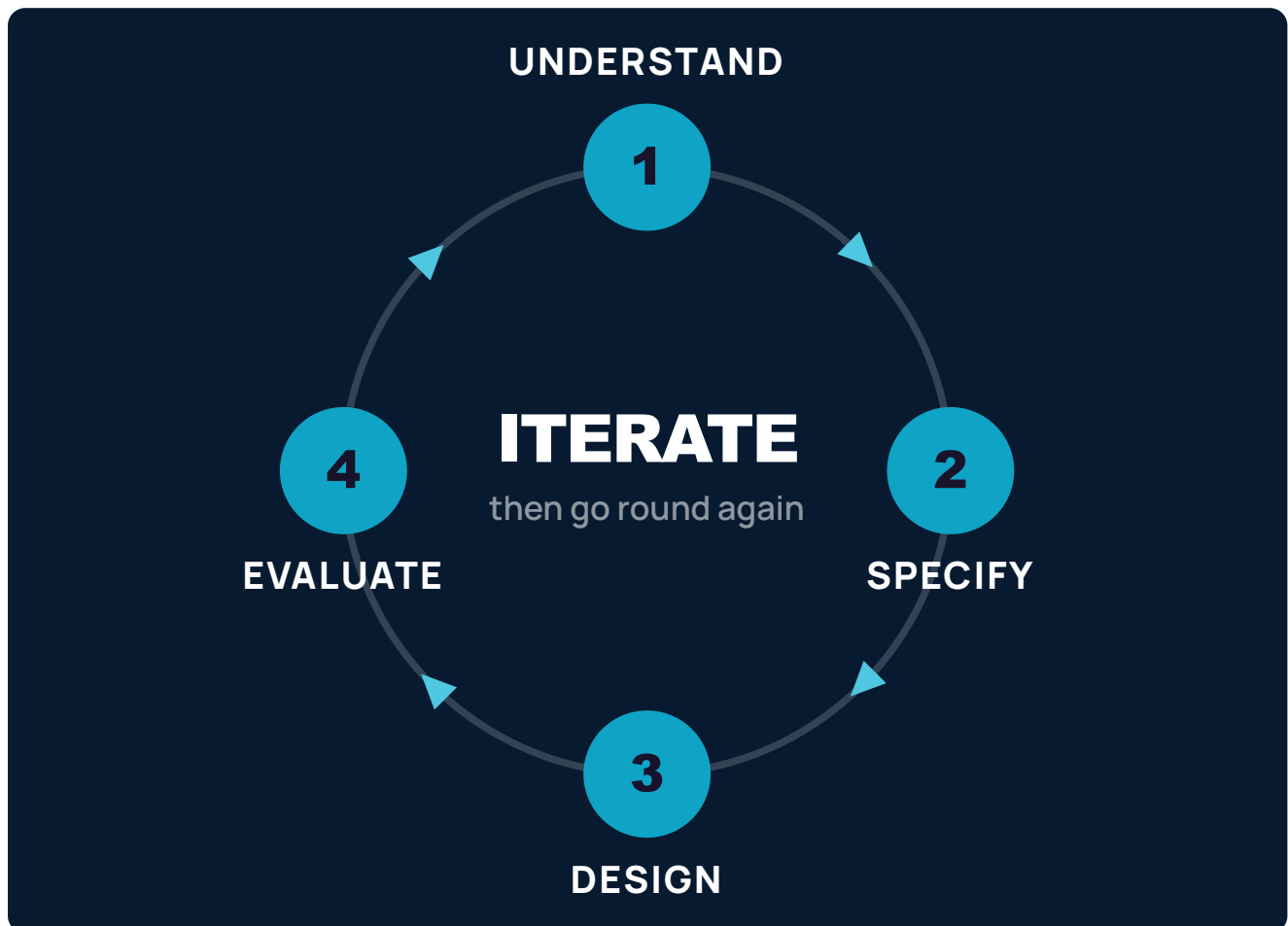
The trap this avoids

Designing for yourself feels efficient because you have instant access to the research subject. It is also the single most reliable way to build something that works beautifully for people exactly like you and poorly for everybody else.

THE FRAMEWORK

Four steps, then round again.

User-centered design is a loop, not a line. Following it is what produces products people actually want to use.



The four steps are ordinary. What makes the framework work is the arrow that returns to the start — the acknowledgement that the first version is a hypothesis, not a deliverable, and that you will learn the most important thing after you have shown it to someone.

A note on order

The steps resist being reordered. Designing before you have specified means choosing a solution before you have chosen a problem; evaluating before you have designed means testing an opinion. When a project goes wrong, it is worth checking whether two of these quietly swapped places.

WHAT EACH STEP DOES

Understand. Specify. Design. Evaluate.

1 · Understand

How does the user experience this product, or products like it? Really understanding the end user requires a lot of research — more than most timelines assume.

Output: a real picture of the user's characteristics, goals and pain points.

2 · Specify

Based on that research, narrow down which end-user problem is the most important one to solve. Not the full list — the one the product exists to address.

Output: a problem statement the team agrees on.

3 · Design

Come up with ideas for what the product might look like, and start actually building it. This is the step everyone wants to start with, and the one that is cheapest when it starts third.

Output: something a person can attempt to use.

4 · Evaluate

Measure the design against the end user's needs. Does it solve their problem? You find out here — and you find out by testing the product with real people, not by reviewing it internally.

Output: evidence, and a list of what to change on the next pass.

Ask on your project

Which of these four steps did we actually complete last time, and which one did we skip because we already "knew" the answer?

THE PART THAT IS EASY TO SKIP

Iteration is the point.

Iteration means doing something again — building on previous versions and making tweaks. It is not a sign the first attempt failed. It is the mechanism by which anything gets good.

Teams tend to treat the loop as optional once a deadline appears, which is precisely when it matters most. A single pass through understand-specify-design-evaluate produces a product shaped by your best guesses. A second pass produces one shaped by what actually happened when people used it.

WORKED EXAMPLE · GOOGLE PHOTOS**Launched to store photos. Redesigned to relive them.**

Google Photos launched as a place to store photos and keep them organised — a reasonable reading of what people needed. Over time the team noticed something the original brief had not anticipated: users also wanted to revisit memories and relive treasured moments.

That observation went back into the process rather than into a backlog. The team ran user-centered design again and redesigned the product so people could search their way back to those memories. The second version was not a correction of a mistake. It was the loop working.

What iteration looks like in a schedule

- A prototype that goes in front of users before the database exists.
- Releases shipped in increments people can open and use as they land.
- A support window after launch, when the first real users find what testing missed.
- A standing assumption that version two is already expected, and budgeted for.

Ask on your project

What have we learned since launch that would change the design — and is there any route by which that learning becomes a change?

BEFORE YOU DRAW ANYTHING

Five questions worth asking out loud.

Most of the initial research you conduct is about getting to know your users' characteristics, goals and pain points. Understanding them is what lets you design something genuinely helpful.

The main risk is a narrow view of the user — assumptions built on stereotypes. Users who seem different from one another often turn out to share wants and needs. Step back and get a clear picture of *all* your potential users, which usually means specifically planning to address the needs of people who are routinely overlooked.

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

Widen the sample deliberately

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

Make every user feel the experience was designed just for them.

No matter who they are, where they live, how much they earn, what their abilities are, or how highly they are educated.

QUESTION ONE

Impairments and disabilities.

1 bn+

people worldwide live with a disability, out of a global population of 7.8 billion

1 in 4

adults in the United States identify as having a disability

Accessibility is the design of products, devices, services or environments for people with disabilities. Accessible designs allow users of diverse abilities to navigate, understand and use your product. Keeping those users in mind as you design features or new products is not an obstacle to the work — it is how you get the product to as many users as possible.

Three kinds of constraint

Permanent

A person with one arm. A person who is blind. The constraint is constant.

Temporary

An arm in a cast. An eye infection. The constraint is real for weeks and then gone.

Situational

A parent holding a baby. Bright sunlight on a screen. A noisy bus. The constraint arrives and leaves within a minute.

Designing for the first almost always improves the experience for the other two — which is why the group affected by accessibility work is never as small as it first appears.

Accessibility is about making products usable by all people — whether they have a disability or not.

Think of magnification and enlarged fonts, or closed captions: features built for specific needs that became universal.

QUESTION TWO

How familiar are they with technology?

User experience is not only about the experience of existing users. It also means paying attention to 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. For this emerging population, the level of digital literacy is a key design consideration — and one that is almost invisible to a team that has been online since childhood.

Digital literacy: the ability to use information and communication technologies to find, evaluate, create and communicate information.

Requiring both cognitive and technical skills. — American Library Association

What this changes

People with limited digital literacy might not be familiar with design patterns, calls to action or icons that more experienced users take for granted. They may not know what “swipe” means in relation to a touchscreen. They may not know what a touchscreen is.

The consequence is not only that a task takes longer. Unfamiliarity affects confidence and willingness to explore new technology at all — so a design that assumes fluency does not merely slow these users down, it can stop them from trying.

Assumes fluency

Unlabelled icons. Gestures with no visible affordance. A hamburger menu as the only route to anything.

Assumes nothing

Words beside icons. Visible buttons. A first-run path that shows rather than tells. Nothing hidden behind a swipe.

Ask on your project

If someone opened this product having never used one like it, what is the first thing they would not know — and does the interface teach it, or assume it?

QUESTION THREE

How are they reaching it?

Not all users will access your product the same way, because devices and internet services cost money and are not evenly distributed.

Those differences are usually the result of broader and historical factors in the markets you are designing for, rather than individual choices. Treating them as a user's problem rather than a design input is how a product ends up working only for people who already had the most.

What actually happens

- The data a user bought has run out, mid-task.
- Network coverage is inconsistent or sporadic, so the connection comes and goes rather than failing cleanly.
- The device is mid-range and several years old, with a slower processor and less memory than anything on the design team's desk.
- Loading a heavy image costs the user money, and they know it.

As a designer you should find ways to take the **offline** experience into account as well as the online one. That means deciding what the product does when the connection is not there — not as an error state, but as a normal condition it was built to handle.

Treats offline as failure

A spinner, then an error. Work in progress is lost. The user starts again, on data they have already spent.

Treats offline as normal

Work is queued locally and reconciles when signal returns. Content already fetched stays readable. Nothing is lost.

Ask on your project

Have we tried this on a mid-range phone, throttled to a slow connection, with the screen in sunlight? Not as a test case — as the default way we review work.

QUESTION FOUR

Where and when are they using it?

Designing for people in various locations brings in local languages and cultural norms — and those norms keep changing as people integrate and recontextualise technology in their lives.

That last point is easy to miss. Culture is not a fixed parameter you look up once. You will need to keep researching potential users to identify shifts in problems, preferences and usage patterns over time.

Language is not one setting

Users who speak languages other than the primary language of your product may want or need to switch depending on what they are trying to do. Someone might want to read in Hindi but type using the English keyboard. Someone else will hit a concept that does not translate cleanly from one language into another, where a literal translation is worse than no translation.

A multilingual keyboard option

Reading and writing are separate decisions. Let them be set separately.

Universally recognised icons

A local currency sign on a banking app does more work than a translated label, and travels further.

The takeaway

Your goal is to solve a user problem by creating a design that makes every user feel you designed the experience just for them — no matter who they are, where they live, how much they earn, what their abilities are, or how highly they are educated. Gaining a comprehensive understanding of your user's context is where that starts.

Ask on your project

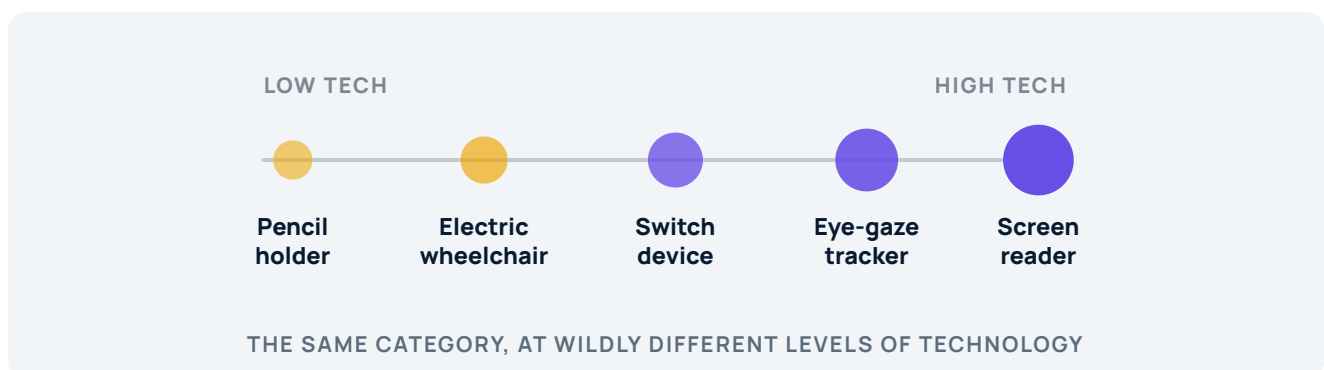
Which of our assumptions about how people use this are actually assumptions about where we live? Currency, date format, name order, address shape, working week.

ASSISTIVE TECHNOLOGY

Any tool that makes the day work better.

Assistive technology (AT) — any product, equipment or system that enhances learning, working and daily living for people with disabilities.

Understanding how people with disabilities use your product is a critical part of the design process. The first thing to correct is the mental image: AT is not a category of gadget, it is a category of purpose.



AT covers prosthetics, pointing devices, electric wheelchairs, power lifts, eye-gaze and head trackers — and something as low-tech as a pencil holder. A pencil holder stops a pencil rolling away and makes it easier to grip, which can be essential for someone with certain motor disabilities. Nothing about it is electronic, and it is still assistive technology.

Plenty of people who do not identify as having a disability use AT every day.

Pinch-to-zoom expands an image for someone with a visual impairment and for someone without one. ATs make life easier and simply produce a better experience.

Start noticing

Do you turn on closed captions while streaming? Ask a smart speaker to play something? Use the tab key to move between text fields? Then you already use assistive technology — and it is worth stopping to consider how the designer built for it. Over time, these small observations are what turn you into a user-centered designer.

KNOW THESE FOUR

What your users are actually using.

You do not need to be an expert in any of these. You do need to know they exist, and to design so that they work.



Colour modification

High-contrast mode and dark mode increase the contrast of colours on screen. Black text on white, or white text on a dark ground, are both high contrast.

[For low vision — and for anyone facing glare, or a screen in a dark room.](#)



Voice control

Lets users navigate and interact with the buttons and screens on a device using only their voice. Most devices ship with a setting for it.

[For limited dexterity — an alternative to a keyboard or a mouse.](#)



Switch devices

A switch replaces the need for a keyboard or mouse altogether, allowing someone to control a computer or smartphone by other means. They come in many forms.

[For limited motor ability.](#)



Screen readers

Software on mobile and web that reads out any on-screen text, plus interactive elements like buttons, their names, and the alternative text behind images.

[One of the most common ATs for people with limited vision.](#)

Get familiar first-hand

Nearly all devices on the market today — computers, tablets and smartphones — include some form of accessibility support, and the features change constantly. The fastest way to learn what exists is to open the accessibility settings on the device in your hand and turn several of them on for a day.

THE BRIDGE

Meaningful, or merely decorative.

Alt text translates a visual user interface into a text-based one — words that describe any meaningful image for someone who is not able to see it.

Screen readers read the text on a screen, and they read alt text. Designing with them in mind means considering your users, determining which images they will find **meaningful** rather than merely decorative, and then writing clear alt text to describe those visuals. With that in place, users get value out of your product's images even if they have visual impairments — or a low-bandwidth connection that makes images difficult to load at all.

Deciding what is meaningful

Meaningful

A product photograph. A chart. A diagram of a process. A photo of a building on a project page. If removing it would cost the reader information, it needs alt text.

Decorative

A background texture. A divider flourish. A stock image that repeats what the heading already said. Mark it as decorative so the reader is not read a description of nothing.

Writing it well

- Describe what the image communicates in this context, not everything it contains.
- Skip “image of” and “photo of” — the screen reader already announced that.
- If the image carries text, the alt text carries that text.
- If the image is a link, describe where the link goes, not what the picture shows.
- Read it aloud. If it is tedious to hear, it is tedious to hear every time.

The second audience

Alt text is also useful for context when an image fails to load at all — which happens constantly on unreliable connections. It is one of the clearest cases of an accessibility feature quietly serving a much larger group than it was written for.

WHEN, EXACTLY?

Throughout – not as a final check.

Effective UX designers consider assistive technology across the whole process: from understanding users' experiences, to identifying users' needs, to designing and testing solutions.



Colour modification – a job application form

A designer is creating a job-application form users complete on their mobile devices. During the early phases they try to understand how users might experience the form across a variety of devices, and discover that some people use both light-mode and dark-mode settings — switching back and forth depending on their surroundings and the application they are using. So the form itself gets a light/dark toggle, which minimises the risk that certain users miss key instructions or interactive features like text-input fields and buttons.

Switch devices – a restaurant website

A team finishes its first prototype, which lets test users simulate navigating the live site. One user reports they cannot use their mouse to navigate it. Keyboard navigation is the answer — a common switch technology that lets people work a site strictly with the keyboard. The principles of user-centered design demand that websites support it, and in many places laws and regulations require the same. So the team must return to an earlier phase and re-work the prototype. Using the early phases to understand how their users navigate would have avoided the whole detour.

Voice control – a smart thermostat

A designer creating a vocal user interface (VUI) for a smart thermostat begins by researching how people interact with similar voice technologies — observing them using other smart thermostats to get a sense of how differently people express the same command. The finished VUI accepts multiple questions and commands for the same task, such as lowering the temperature or turning the unit on and off.

FROM SOMEONE WHO RELIES ON IT

Living with the products we make.

It is one thing to read a list of assistive technologies. It is another to hear from someone whose working life depends on whether a designer thought about them.

AN ACCESSIBILITY AND INCLUSION LEAD, GOOGLE

“Captioning is the most valuable thing for me.”

She began losing her hearing at ten, and it progressed over five years into the profound range. If you covered your mouth and said a hundred words, she might get one right. She uses assistive technology in many forms: live transcription for real-time conversations, closed captions in meetings with colleagues, and a service that captions telephone calls through a live transcriber.

That last one, she says, completely changed her world — because before it existed she could not use a telephone at all, and that single gap blocked her capabilities at work.

Two pieces of advice

Consider users with difference in every phase

Edge cases are where the valuable insight is. It should be a normal part of your development process, considered from the beginning — not an add-on at the end.

Diversify your own network

Get to know people who are different from you. Ask what their experiences with technology are actually like. Learning those unique experiences is what lets you see the opportunities for great design in your products.

Difference helps us see the gaps in our products.

Look into those gaps and you tend to build products that are more adaptable, longer-lasting and more innovative — for everyone, not only for the group that revealed the gap.

EVERYTHING IN ONE PLACE

Checklist and glossary.

Before you draw

- ✓ We have watched and listened to real users — not only discussed them.
- ✓ We can name the single most important end-user problem we are solving.
- ✓ Research participants span income, age, gender, ethnicity, education and location.
- ✓ We asked about permanent, temporary and situational impairments.
- ✓ We know our users' level of digital literacy, and have not assumed patterns are obvious.

Before you ship

- ✓ The product degrades gracefully on a weak connection, and has an offline story.
- ✓ Language, currency and cultural norms are handled for every market we ship to.
- ✓ The interface works in light and dark mode, and at high contrast.
- ✓ Every flow can be completed by keyboard alone.
- ✓ Voice commands accept more than one phrasing for the same task.
- ✓ Meaningful images have clear alt text; decorative ones are marked as decorative.
- ✓ We tested with people who actually use these technologies.

Glossary

User

A person trying to solve a problem, looking for a product or service to help them solve it.

Iteration

Doing something again — building on previous versions and making tweaks.

Assistive technology

Any product, equipment or system that enhances learning, working and daily living for people with disabilities.

Switch device

Hardware that replaces a keyboard or mouse for people with limited motor ability.

Digital literacy

Using technologies to find, evaluate, create and communicate information.

User experience

The journey that user takes with the product or service.

Accessibility

The design of products, devices, services or environments for people with disabilities.

Alt text

Words describing a meaningful image, so a visual interface can be read as text.

VUI

A vocal user interface — a product operated by speaking to it.

Keyboard navigation

Operating a site or app using only the keyboard.

Where to read further

Google Accessibility publishes a video playlist on assistive technologies. Android, Windows, macOS and iPhone each document their own features — and update them constantly, so the Help on your device is the current source.

WHO MADE THIS

We design and build the whole surface of a company.

Omnisphere Tech is a digital studio in Abuja. We build the website that wins the enquiry, the app that carries the work, the visualisation that sells the building, and the identity that holds it together.

Website design

Brand-led sites that load fast on a Nigerian network and turn attention into enquiries.

Mobile & web apps

Product engineering from first prototype to a release your team can maintain.

Architectural 3D

Photoreal stills, interiors and walkthroughs that sell a building before it exists.

Graphic design

Identity, reports and print artwork built as a system, not a one-off.

Who does your product currently fail?

If you cannot answer that, it is the most valuable question on your project. Tell us what you are building and we will come back with a scope, a fixed price and a date — with accessibility written into the brief rather than the backlog.

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