

Inclusive Design

Mobile Design & Design Systems

INF2191H
iSchool, University of Toronto

Velian Pandeliev
Feb. 12, 2020

Meet UofT's accessibility librarian!



Learn about:

- inclusive spaces
- alternative materials
- accessible resources



By the MISC Accessibility
Interests Working Group

Friday, February 28 from 12–1pm
Bissell Building, room 307

Assignment 1

How's it going?

Accessibility & Language

Social model of disability

Disability



Personal
Health
Condition

Disability



Mismatched
Human
Interactions

MICROSOFT INCLUSIVE TOOLKIT

Problematic terms:

Able-bodied

Confined to a wheelchair

Suffers from / victim of...

Ableism and language

15 Crazy Examples Of Insanely Ableist Language

By Parker Marie Molloy, October 21st 2013

As with all aspects of design, we must use **intentional**, **precise**, and **respectful** language when communicating with users with disabilities.

Inspect and **challenge** the language you use for any discriminatory or ableist connotations or histories.

List of **ableist terms** and alternatives:

<https://www.autistichoya.com/p/ableist-words-and-terms-to-avoid.html>

Turn a blind eye, deaf to feedback...

Bonkers, crazy, derpy, idiotic,
insane, mad, nuts, psycho, spaz...

Crippling, lame...

OCD

William D. Felt
Director
Federal Bureau of Investigation



Respect and empathy

- **Avoid negative** or value-laden terms (“suffers from...”)
- **Avoid euphemistic** terms ("handi-capable", "differently-abled")
- **Avoid labelling** user groups/personas based on disabilities
- **Avoid emotional** tone, e.g., "hero, saint, victim, burden, soldier, inspiration", etc.
- **Don't patronize**, treat users like any other
- **Address the user**, not their interpreter or companions
- **Never speak for** the person you are talking to
- **Ask** for guidance if unsure

E.g., "Challenged"

Having a disability definitely makes some things more difficult for me, but we all face challenges on a daily basis, regardless of ability. This makes it frustrating when people call me “challenged,” because it makes me feel like my existence is a problem. In reality, most of my challenges stem from circumstances I encounter in the world around me.

EMILY LADAU / BIT.DO/2191EUPH

E.g., "Handicapable"

This term drives me up the wall. It's so cutesy and dripping with condescension, almost like a verbal pat on the head. I don't need sugary-sweet reminders that I am capable of things just because I have a disability. I already know that, because every human has capabilities and limitations. [...]

I know many non-disabled people who say "handicapable" do so with the intention of showing that they don't "see" disability or that it's not a big deal, but disability is part of a disabled person. My disability doesn't make me feel like less of a person, but calling me "handicapable" does.

EMILY LADAU / [BIT.DO/2191EUPH](https://bit.do/2191EUPH)

E.g., "Differently-abled"

Let's think about this one for a moment, because it's actually loaded with prejudiced assumptions. Essentially, "differently-abled" implies that there's such a thing as a standard body that possesses standard abilities.

The problem with this? There's not. No two people are able to do exactly the same things in exactly the same ways. Some people are able to walk on their feet. Some people are able to roll in a wheelchair. Some people can touch their tongue to their nose. Some people can contort like a pretzel.

So, to be technically correct, disabled people aren't the only ones who are differently-abled. We all are.

EMILY LADAU / [BIT.DO/2191EUPH](https://bit.do/2191EUPH)

E.g., "Special needs"

By much the same logic that explains why “differently-abled” is inaccurate, it’s clear that “special needs” is too. If you are a human, you have needs. Everyone has needs. What makes mine so “special” just because I have a disability? Nothing.

My needs are not “special” just because they’re not met in ways identical to the needs of non-disabled people. I need a ramp; you need steps. Not special, just facts. I need a wheelchair; you walk. Not special, just facts.

Moreover, the needs of non-disabled people certainly aren’t all met in the same ways. Just like every other living, breathing human being on this planet, I am a person who has needs that must be fulfilled in ways appropriate to my abilities.

EMILY LADAU / [BIT.DO/2191EUPH](https://bit.do/2191EUPH)

Language: persons with disabilities

- Disabled
- Has a disability
- With a disability
- With a chronic health condition
- Has a chronic health condition
- Neuroatypical
- Neurodivergent

LYDIA X.Z. BROWN

Language: ASD and cognitive disabilities

- Person/people on the autism/autistic spectrum
- Autistic person/people
- Person/people with autism
- With an intellectual disability
- Has an intellectual disability
- With a cognitive disability
- Has a cognitive disability

LYDIA X.Z. BROWN

Language: sensory disabilities

- Blind
- Low vision
- Deaf
- Hard of hearing
- DeafBlind
- DeafDisabled

Language: physical or mobility disabilities

- With a physical disability
- With a mobility disability
- Uses a wheelchair
- In a wheelchair
- Uses crutches
- Uses a cane
- Uses a walker
- Has/With [specific condition here]

LYDIA X.Z. BROWN

What is your favourite game of all time?

We know it can be hard to choose, but you have to pick one!

Because of any physical, cognitive or emotional condition, do you/your child often experience any difficulties in playing video games?

Not at this time (or I prefer not to say)




Why do we ask this?

Game developers are often interested in making their games more accessible to persons with impairments, and we therefore seek individuals with whom to collaborate on improving these games. You are not required to disclose an impairment, however we request that you make us aware of any physical access requirements you may have, if you're invited to playtest.

What is your favourite game of all time?

We know it can be hard to choose, but you have to pick one!

Because of any physical, cognitive or emotional condition, do you/your child often experience any difficulties in playing video games?

Yes 

Why do we ask this?

Game developers are often interested in making their games more accessible to persons with impairments, and we therefore seek individuals with whom to collaborate on improving these games. You are not required to disclose an impairment, however we request that you make us aware of any physical access requirements you may have, if you're invited to playtest.

If you are comfortable doing so, you can provide additional information on games or interactions that present difficulties

Language and community

Person-first language: *person with a disability*

- avoids defining the person entirely by their disability
- disassociates the disability from the person's experience
- implies disability should not be associated with a person as it is intrinsically negative

Identity-first language: *disabled person*

- includes the disability as integral to the person's experience
- frames disability using the **social** model: as a consequence of a barrier-laden environment, not as an intrinsic quality
- can indicate disability pride or community membership

CARA LIEBOWITZ

When in doubt, ask.

Inclusive design

Accessibility audit

- Contrast and text size
- Alt text for non-text content
- Tab order and focus: all on-screen, no off-screen, ordering
- Keyboard-only traversal
- Screen reader traversal

You can try a screen reader to check your designs for accessibility:
NVDA (desktop), VoiceOver (macOS / iOS), TalkBack (Android)

- Structure: headings, landmarks, and semantics
- Alerts to new content

The spell-check of accessibility.

Accessibility simulation

Designers can use **some simulation** techniques to catch low-hanging fruit or make easy improvements:

- straw test (look at screen through a hole-punched hole)
- magnify your screen
- wear thick gloves
- use a screen reader
- unplug mouse, use keyboard only

These simulations have very **shallow, limited utility**.

Research

No matter how hard we try, none of us can "**pretend**" to live with any and all of the possible limitations our users may face.

Get actual **users with lived experience** as soon as possible.

- Remember that users with disabilities don't owe you data
- Approach a user community or group respectfully
- Offer fair compensation for their participation:
 - All participants should be compensated fairly
 - Persons with a disability are at higher risk of low income
 - Lived experience is valuable

LOW INCOME AMONG PERSONS WITH A DISABILITY IN CANADA (2017)



Emma Barnett ✓
@Emmabarnett

Should people with learning disabilities be allowed to work for less than the minimum wage? Debate on @bbc5live 10am spectator.co.uk/2017/03/the-mi...



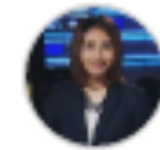
Another Angry Woman
@stavvers

alternate phrasing of this question:
should employers be allowed to exploit some of society's most vulnerable people?

Toronto

Adults with disabilities need to earn minimum wage for sense of 'belonging,' parents say

6 young adults with developmental disabilities have been permanently hired by North York firm



[Kelda Yuen](#) · CBC News · Posted: Feb 19, 2019 6:00 AM ET | Last Updated: December 24, 2019

Families say minimum-wage changes are cutting jobs for people with disabilities

NOELLA OVID

PUBLISHED APRIL 16, 2018

Inclusive design

“**Inclusive design:** A design methodology that enables and draws on the full range of human diversity.

Most importantly, this means **including** and learning from people with a range of perspectives.

Designing inclusively doesn't mean you're making one thing for all people. You're designing a **diversity of ways** for everyone to participate in an experience with a sense of belonging.

Many people are unable to participate in aspects of society, both physical and digital. Understanding why and how people are **excluded** gives us actionable steps to take towards inclusive design.”

MICROSOFT DESIGN TOOLKIT

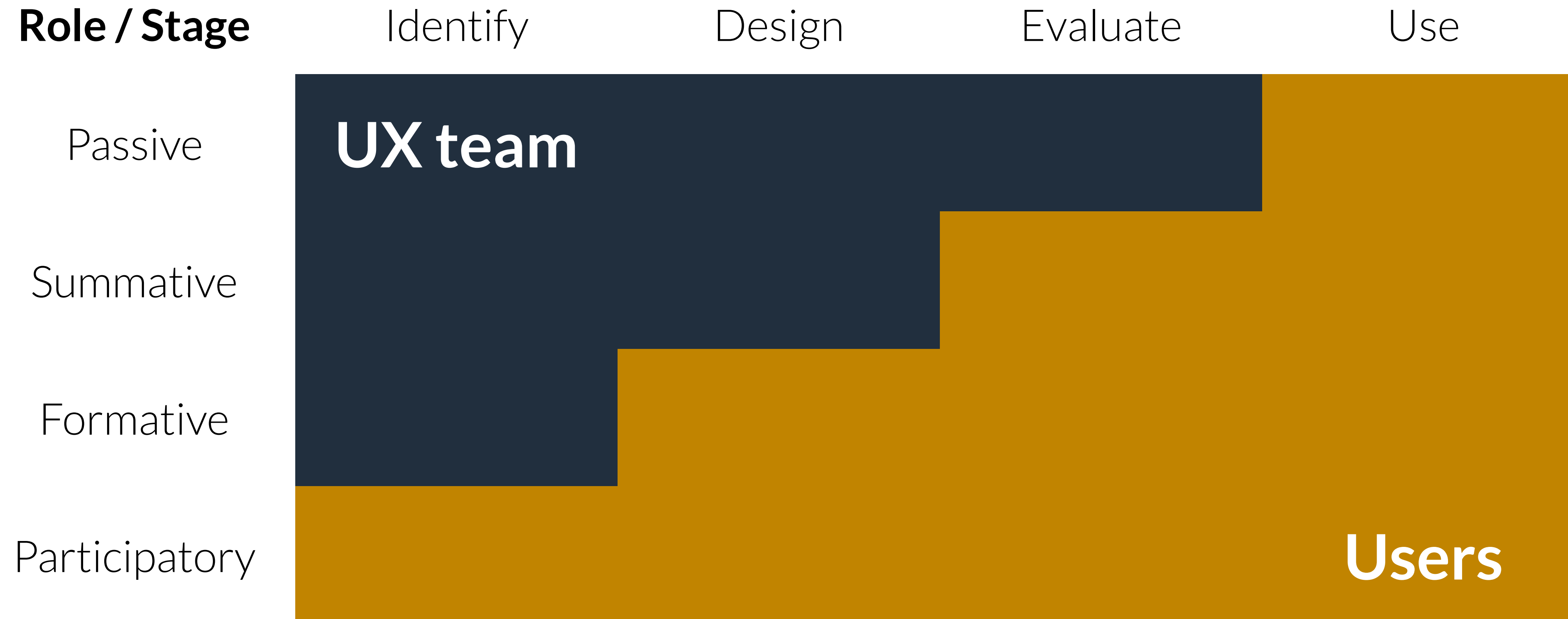
Participatory design

End users participate in and often **lead** the creation of products intended for them while UX designers act as facilitators.



PARTICIPATEINDESIGN.ORG

Levels of user involvement



User testing and disability

- Recruit disabled **users** as part of your usability testing
- Hire an accessibility **consultant** / advocate. Many consultants have lived experience with disabilities.
- Include disabled users as **members of the design team**.
- **Partner with an organization** that manages pools of disabled volunteers for usability studies, e.g., Fable in Toronto (<https://www.makeitfable.com/>),

(Which also offers a great example of respectful, empowering, intentional language)

Example: Xbox Adaptive Controller

Xbox adaptive controller



Xbox adaptive controller packaging

Accessible, looks like any other Xbox accessory on the shelf.





Mobile UI design

Mobile contexts



Limited & split attention:
no quick/secret changes



Frequent interruptions:
persist & resume

Mobile contexts

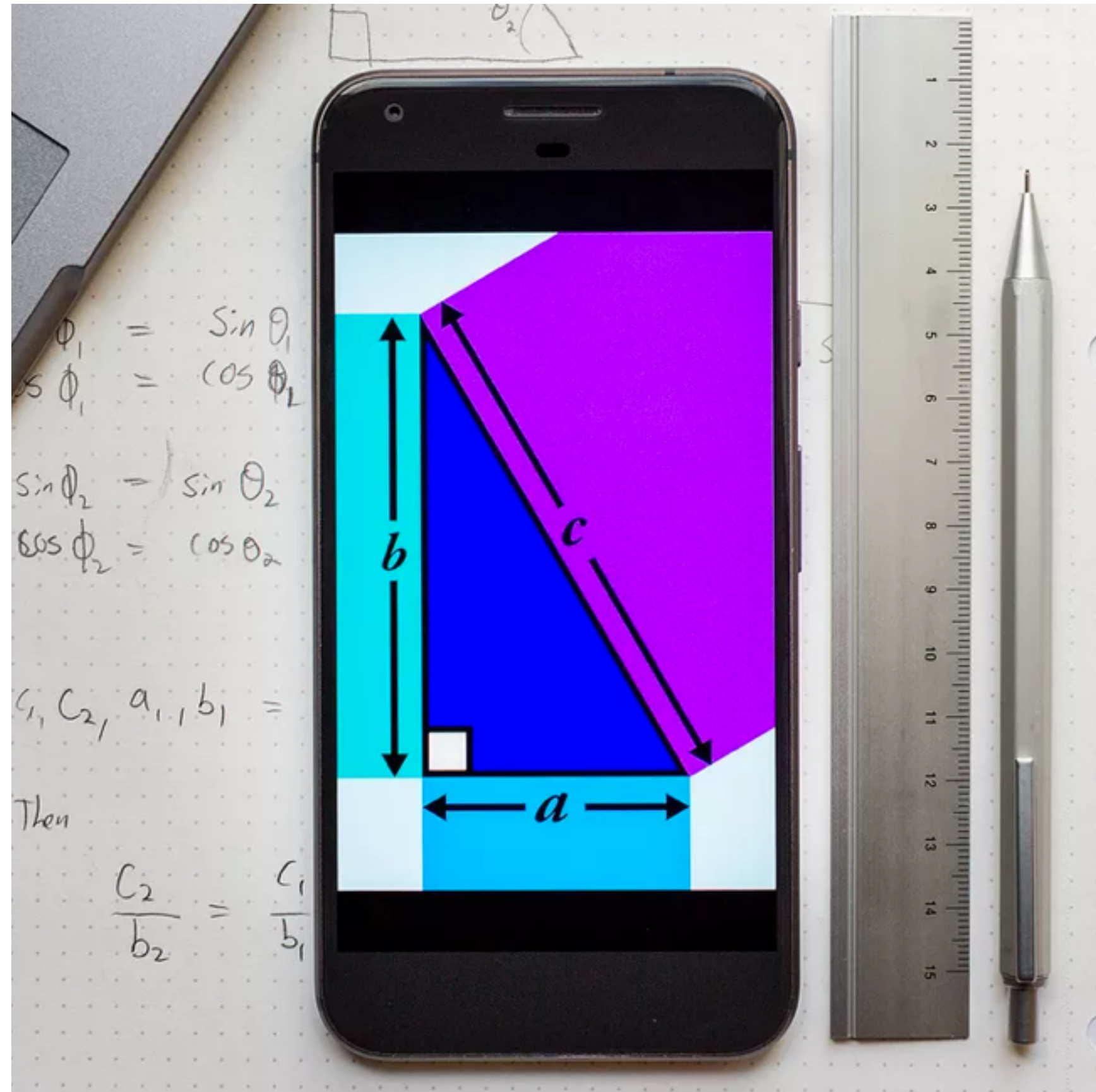


Changing environment,
changing contexts

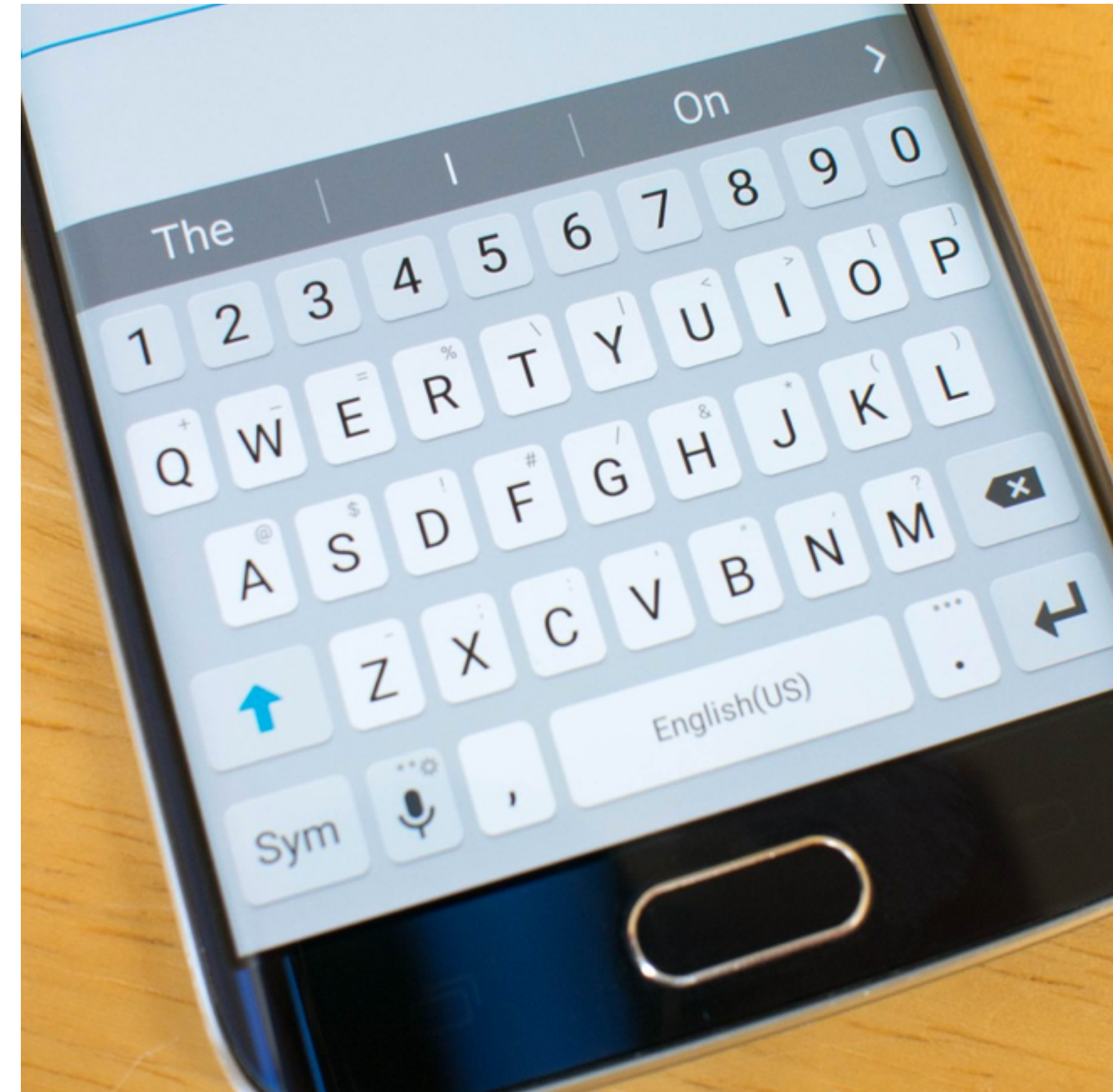


Personal devices:
customization, privacy

Mobile device properties



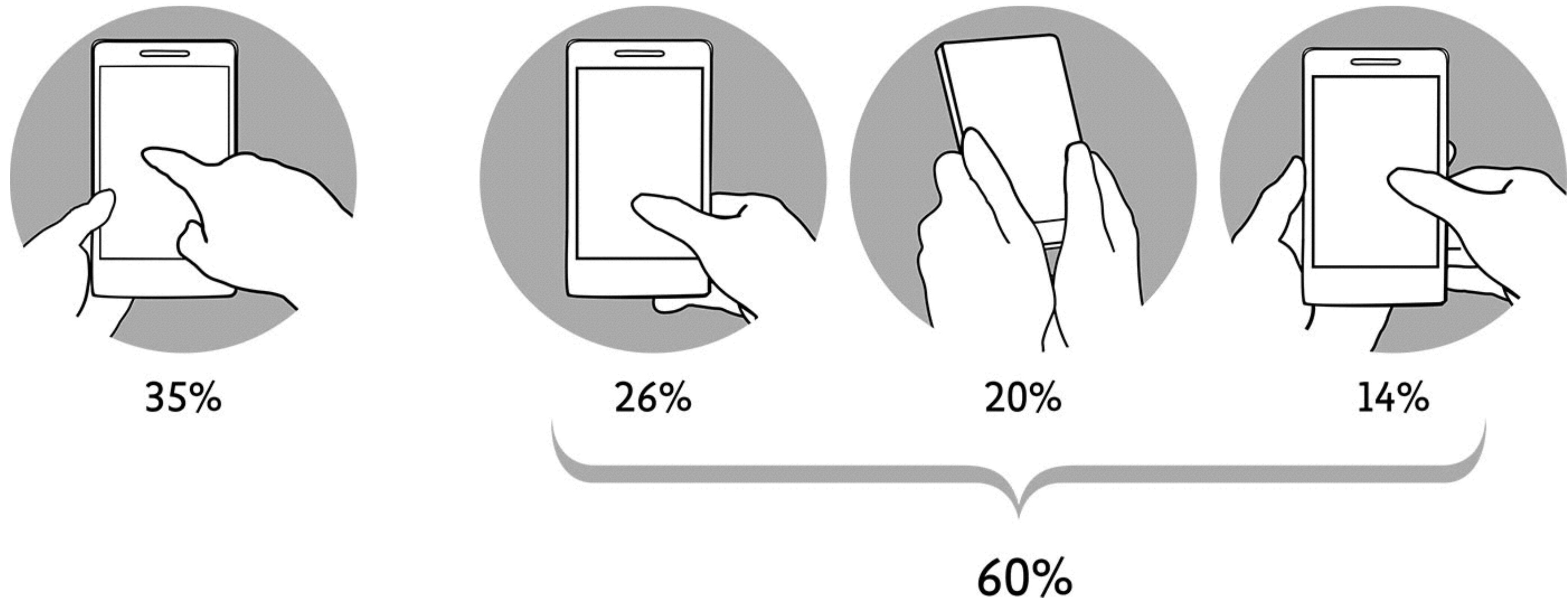
Small screens



Limited input

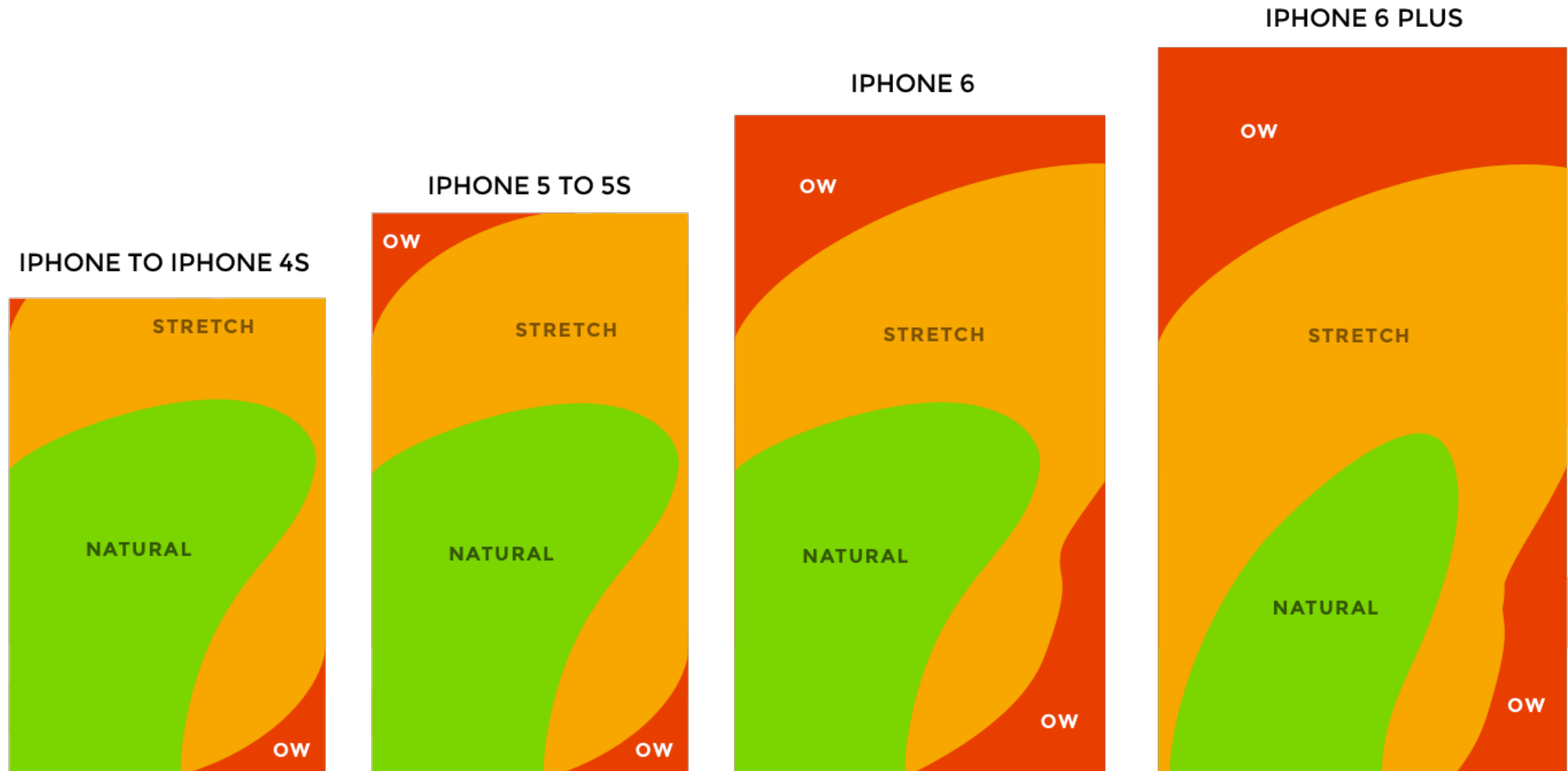
Mobile device physicality

We need to hold mobile devices, which limits our touch capabilities.



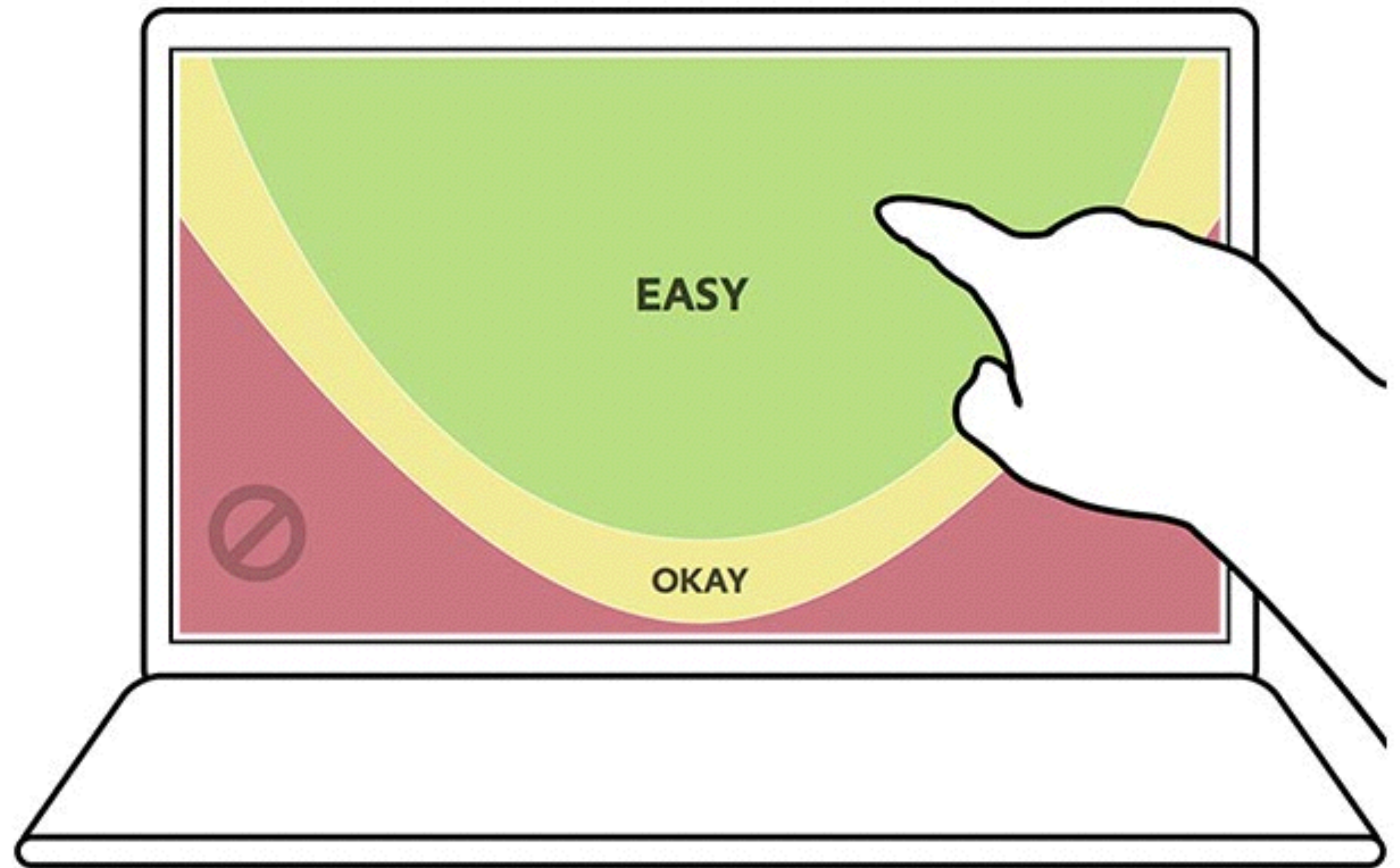
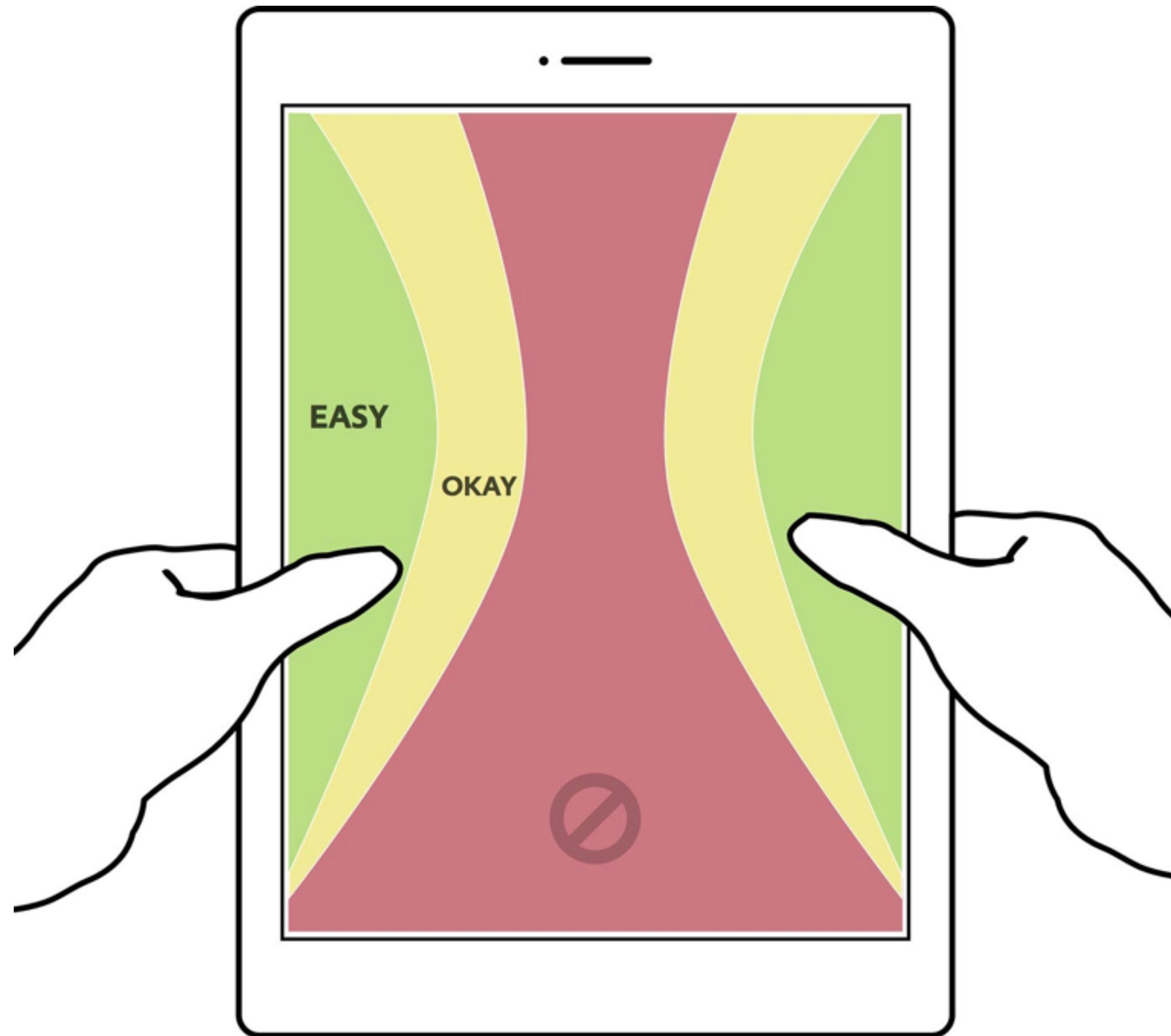
ALISTAPART.COM/ARTICLE/HOW-WE-HOLD-OUR-GADGETS

Mobile device thumb zones



SCOTT HURFF

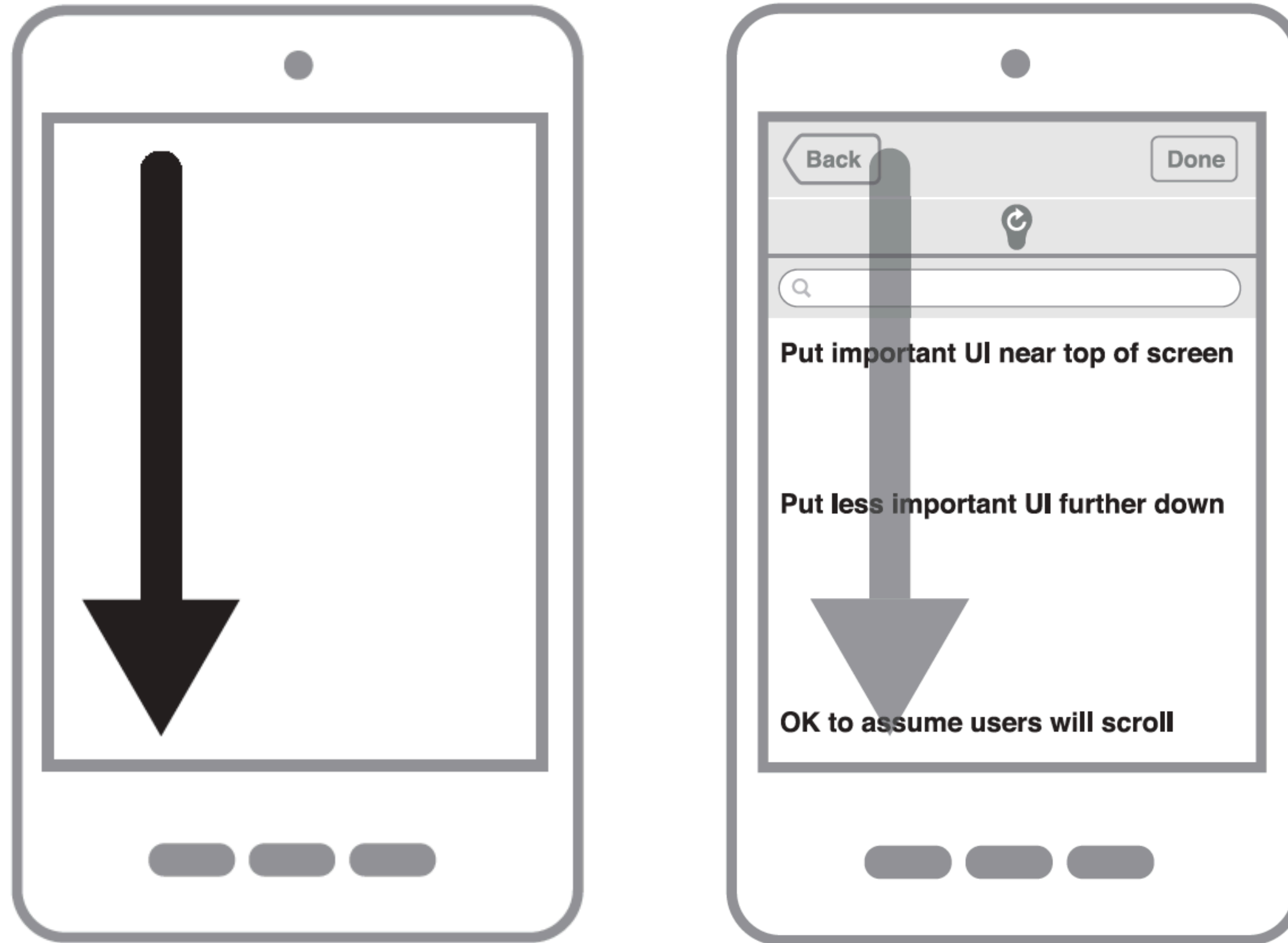
Mobile device thumb zones



ALISTAPART.COM/ARTICLE/HOW-WE-HOLD-OUR-GADGETS

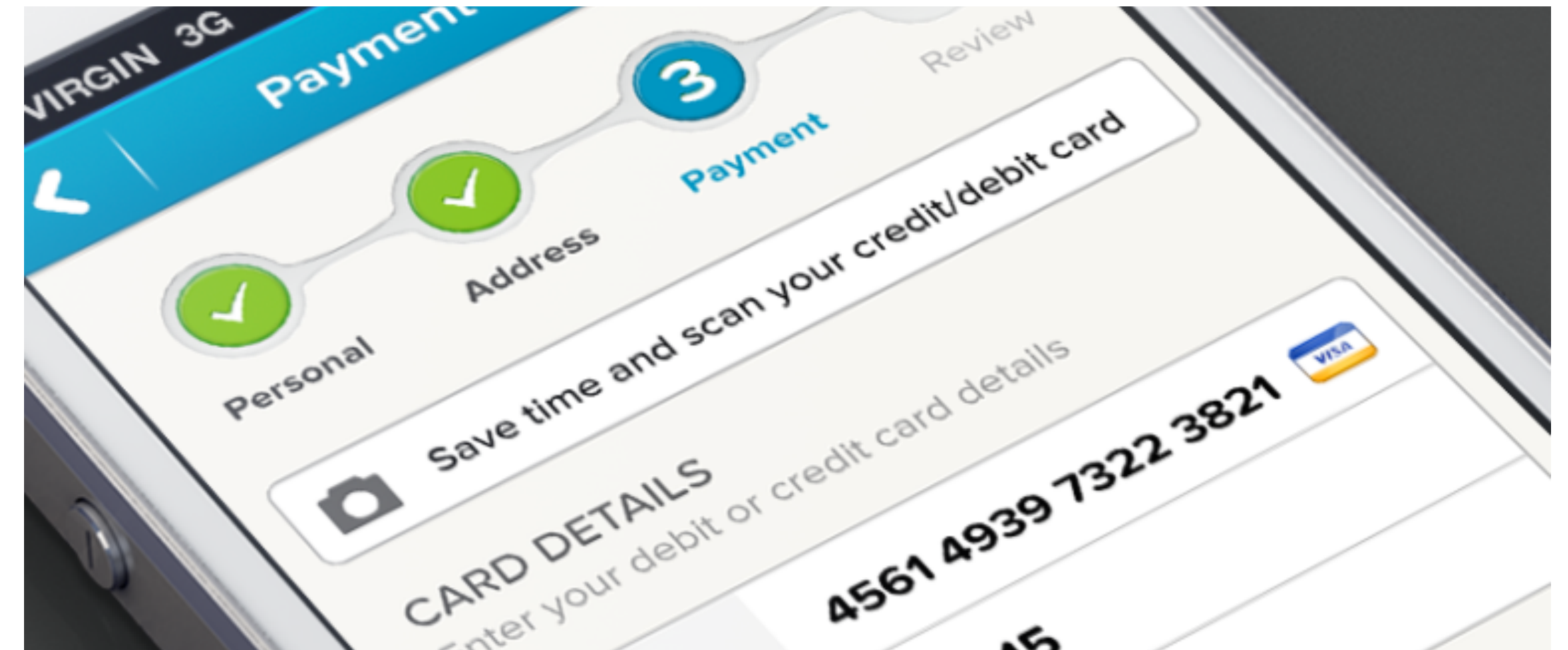
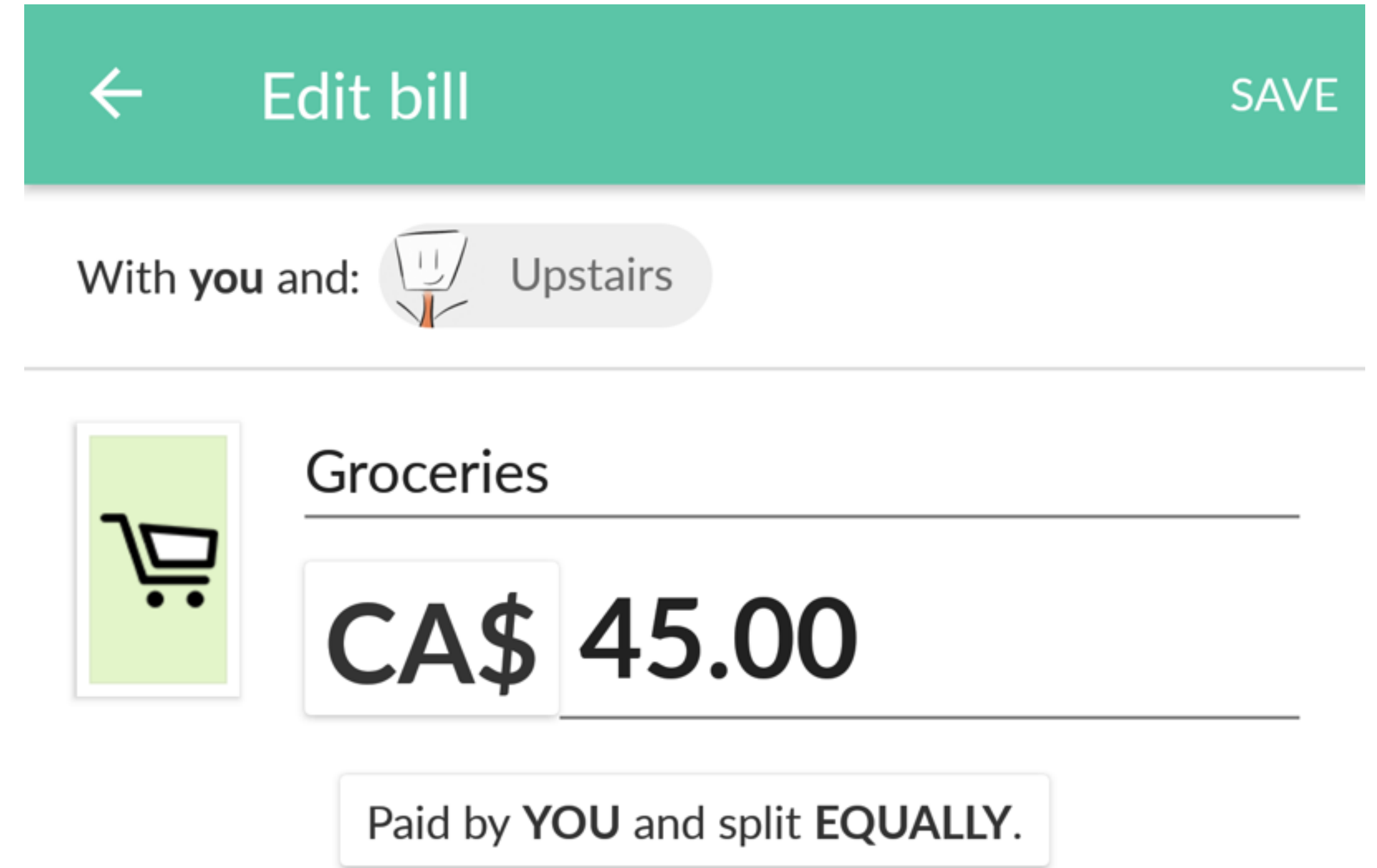
Mobile design principles

Mobile scanning patterns



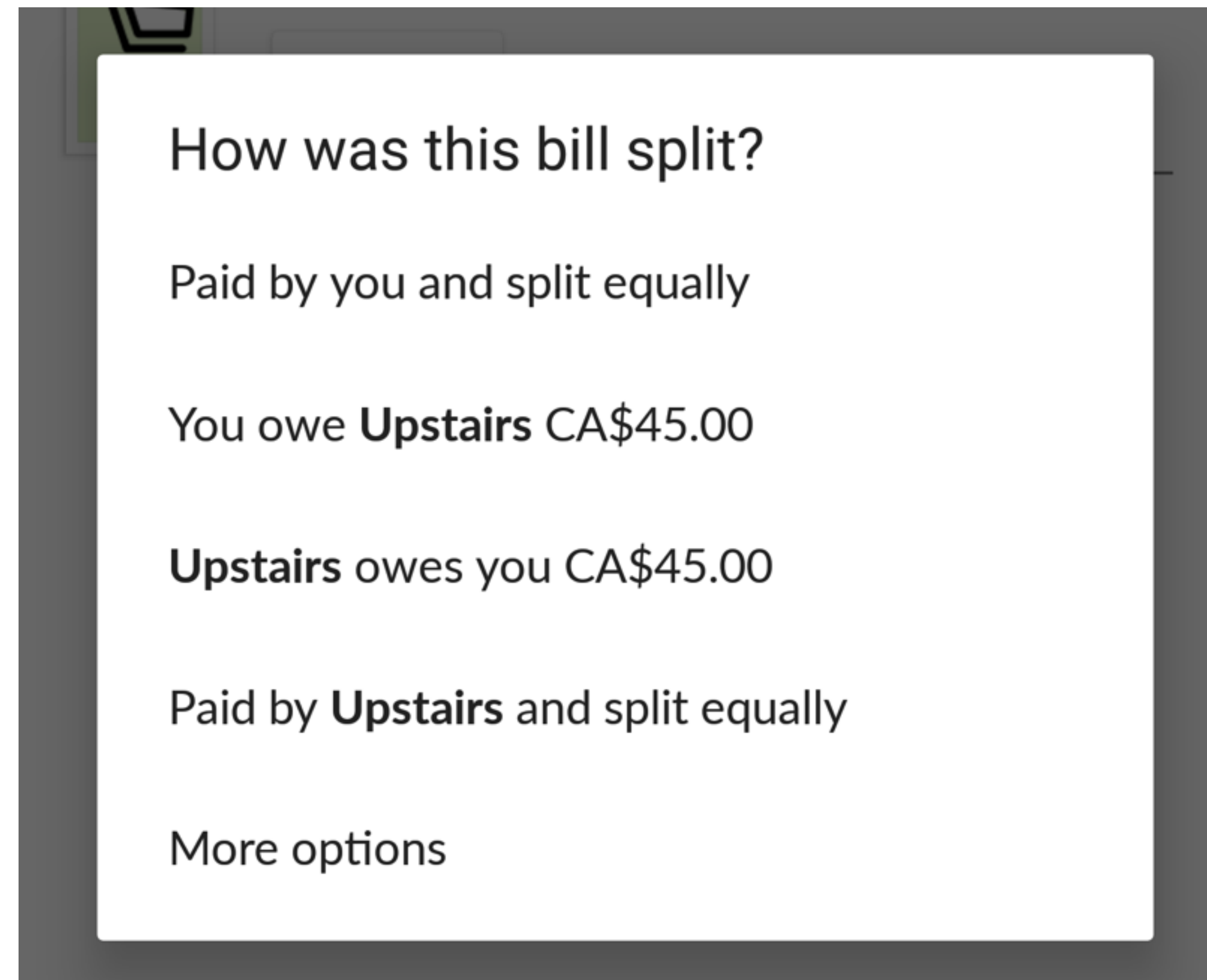
Minimize cognitive load

- Break tasks up into simple subtasks
- Provide one main action per screen
- Give user an obvious next step
- Support undo and recovery



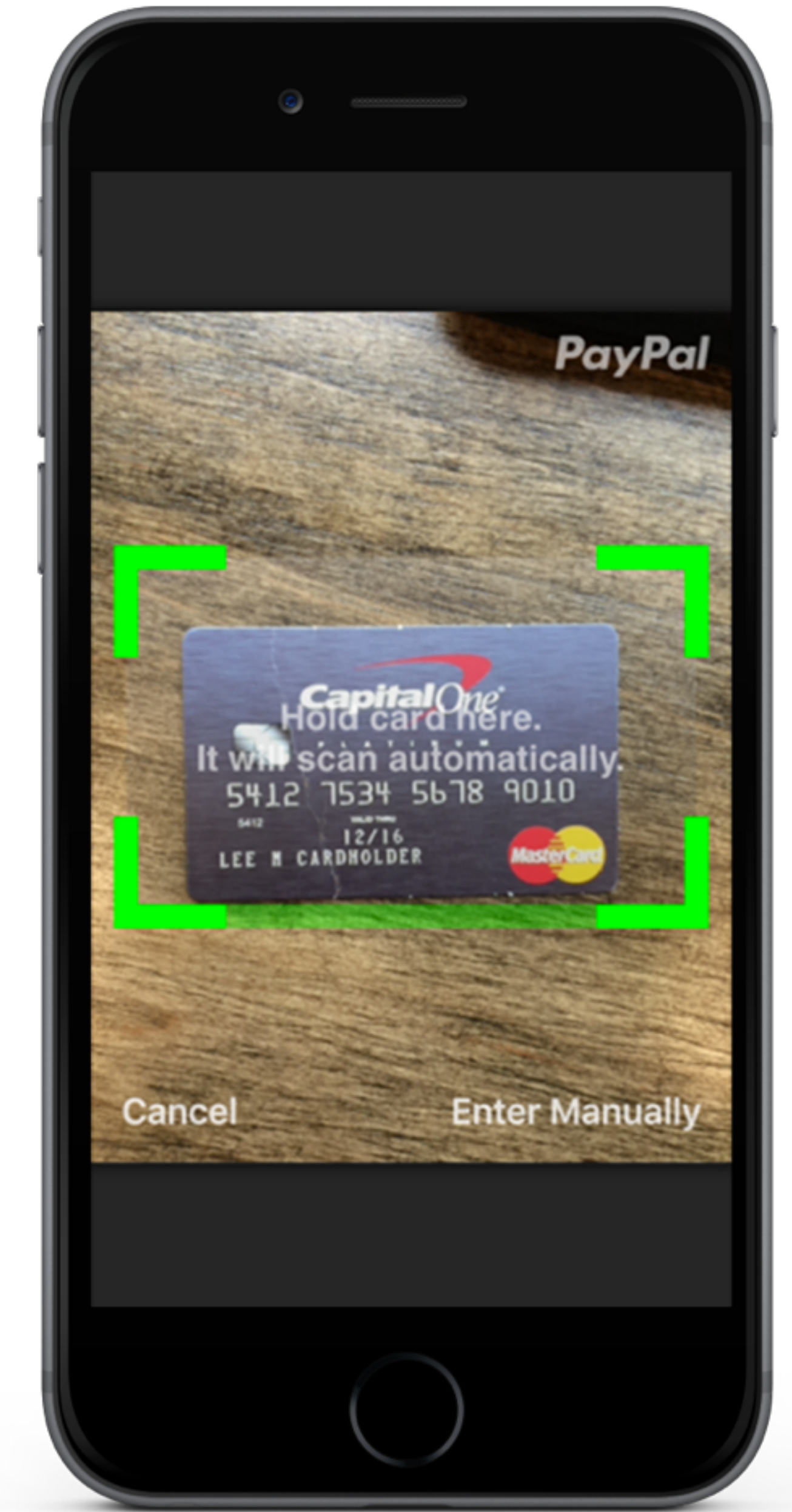
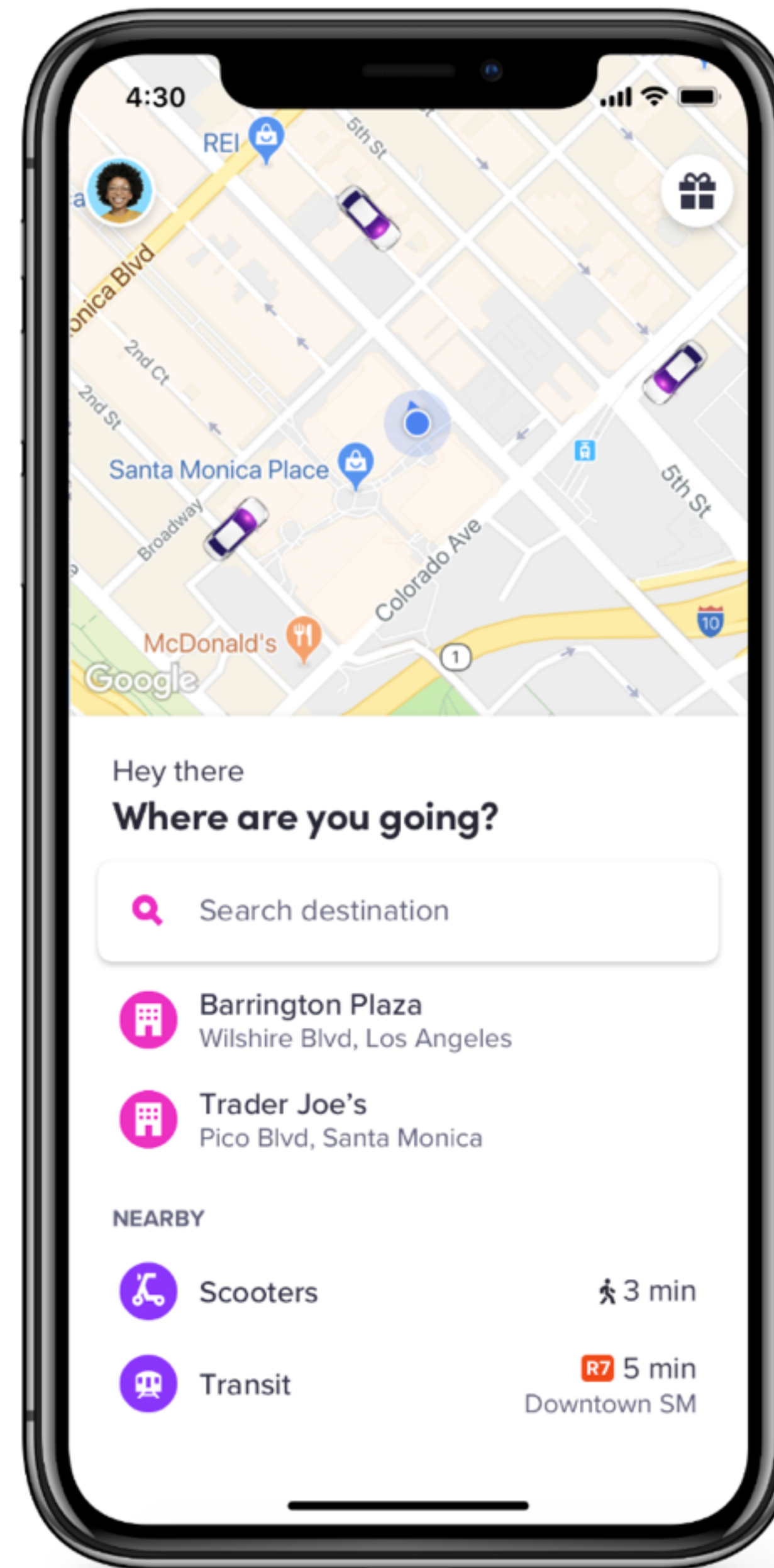
Minimize cognitive load

Use modal screens for important choices



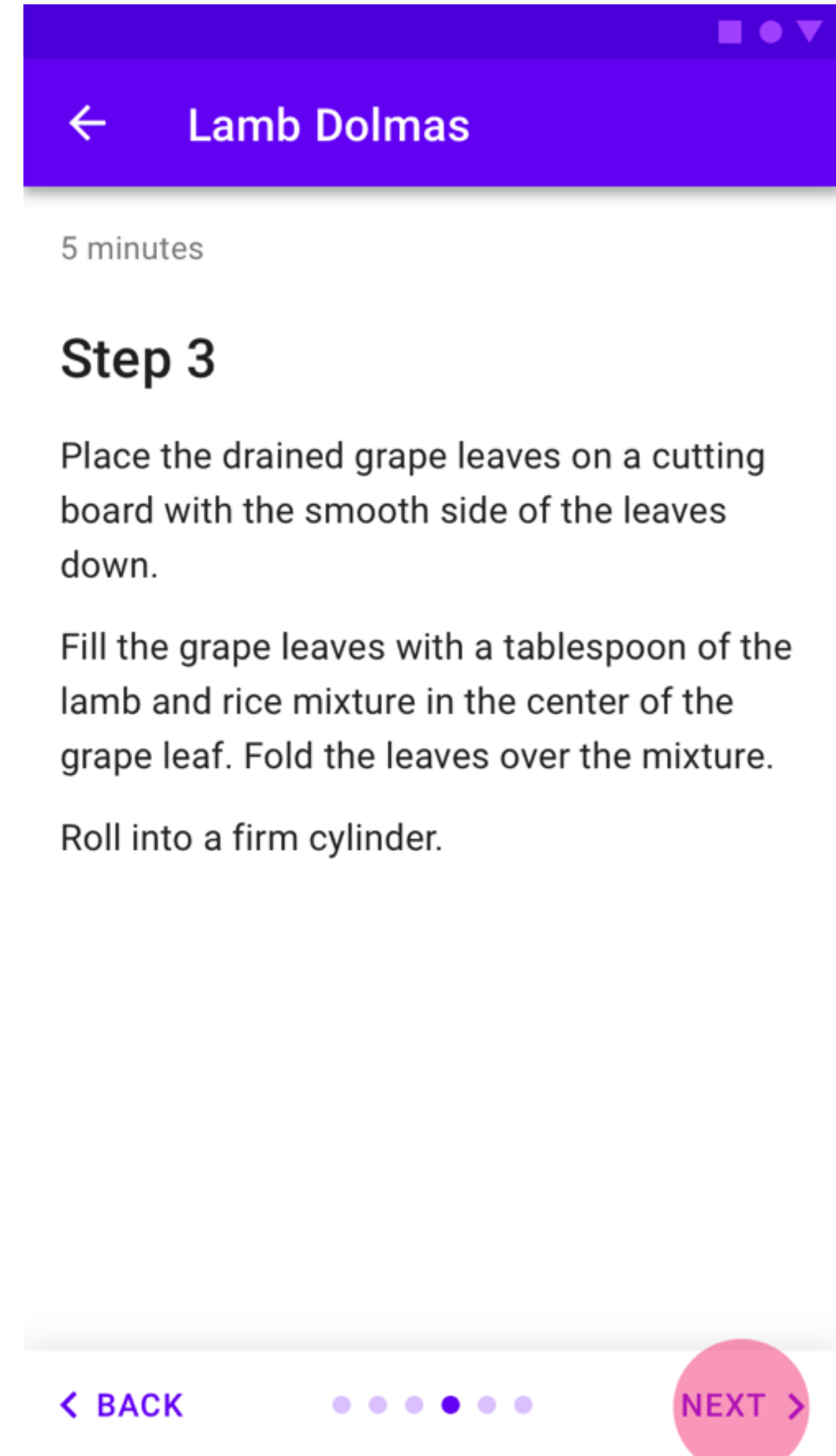
Minimize input

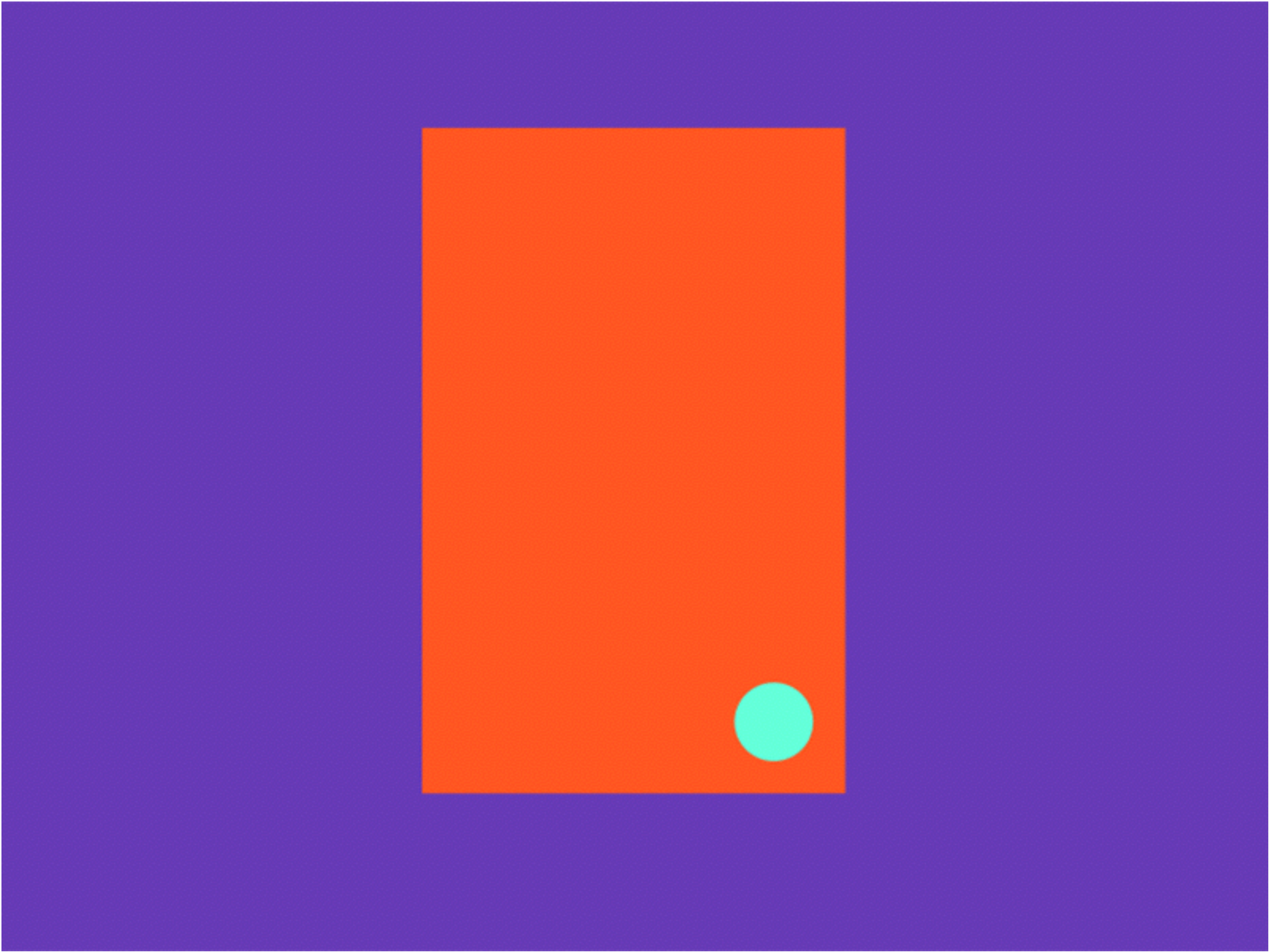
- Persistent sign-in
- Autofill details
- Use location and sensor data
- Use alternate input modalities



Navigation

- Top-down content
- Disclose location
- Make navigation visible
- Consistent, standard navigation patterns
- Prioritize to minimize touches
- Use animation to clarify transitions





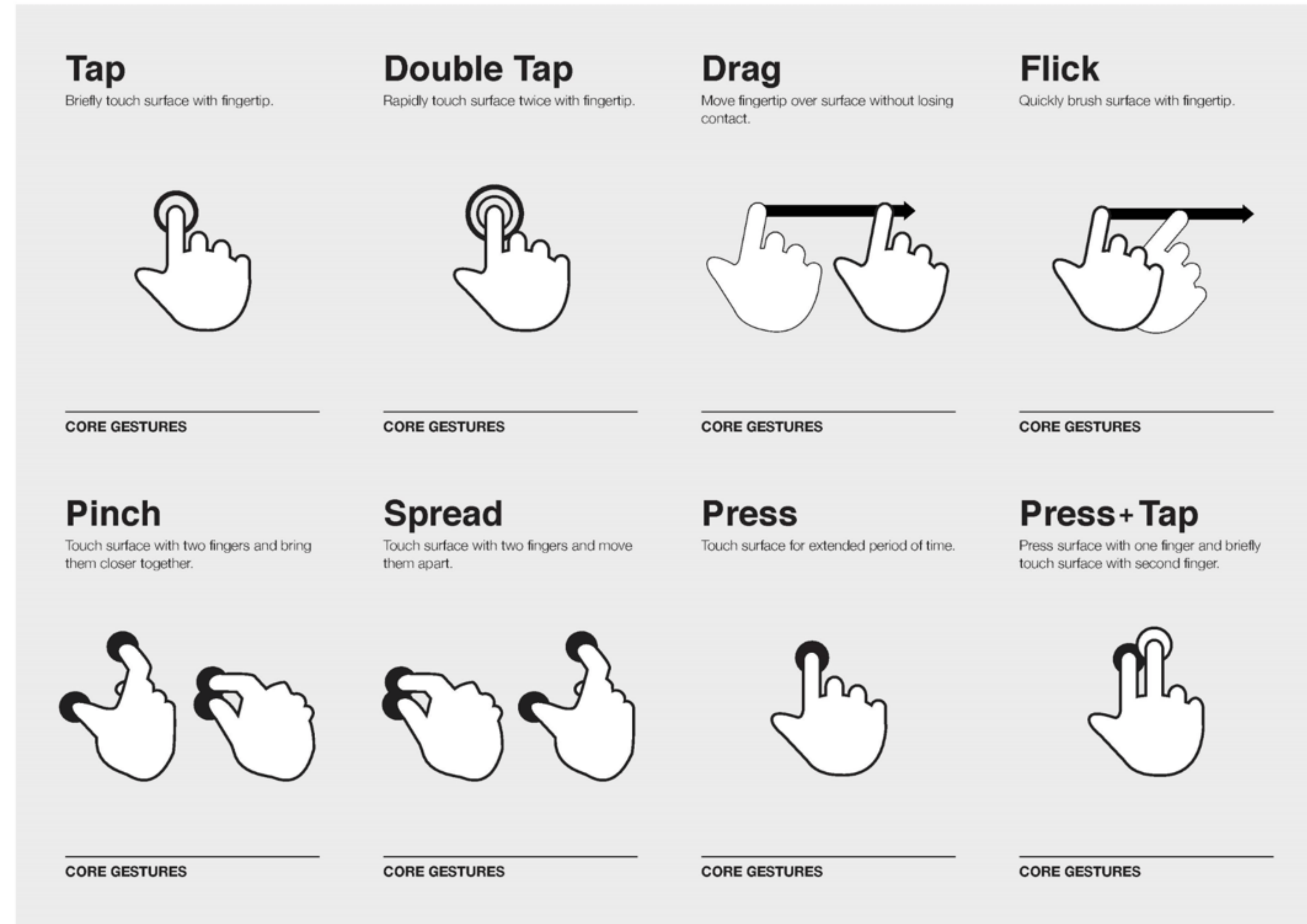
Touch gestures

Gestures broaden the touch interaction vocabulary.

More expressive, natural, seamless, less clutter.

However, they are not visible or discoverable.

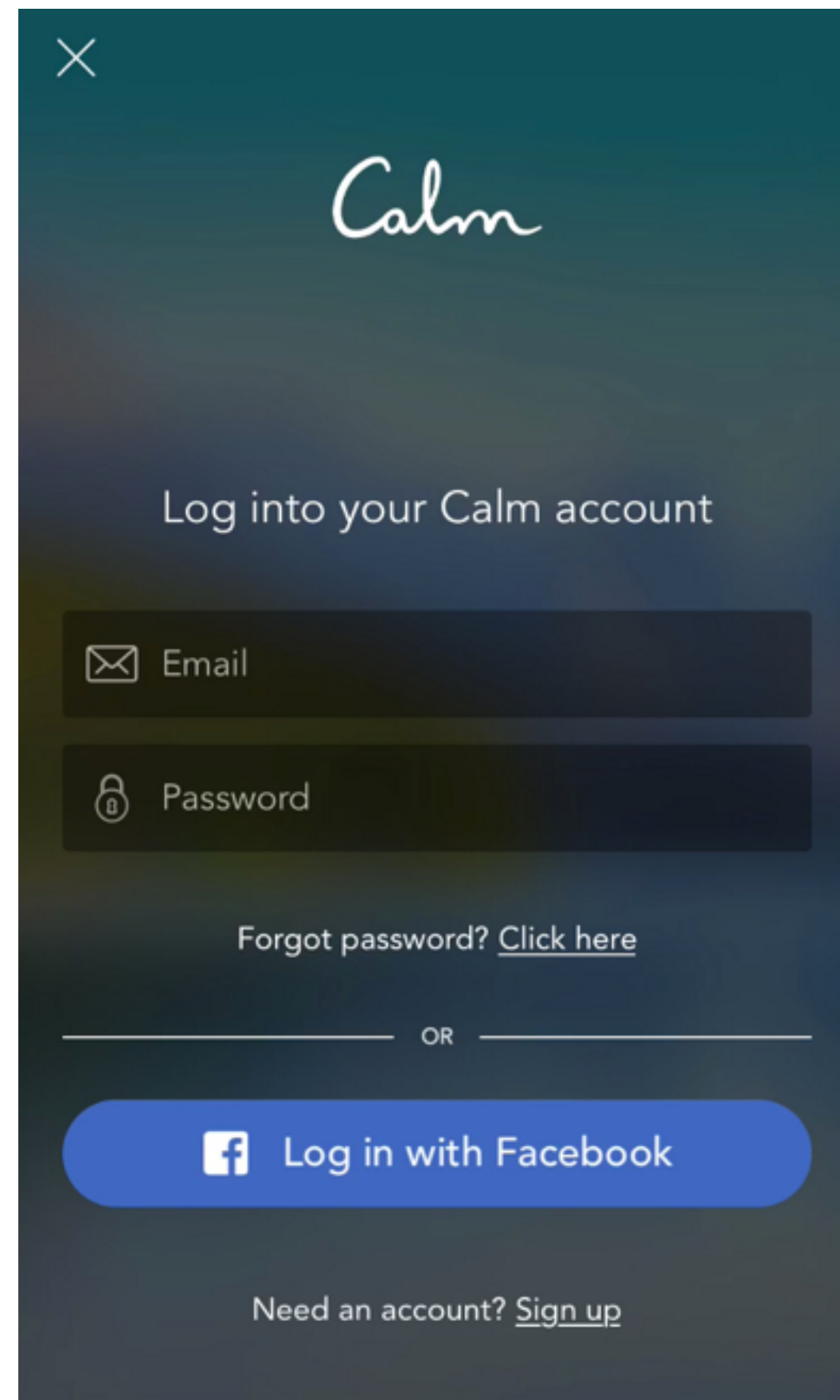
- Treat as advanced shortcuts for power users
- Use standard gestures
- Never use just gestures



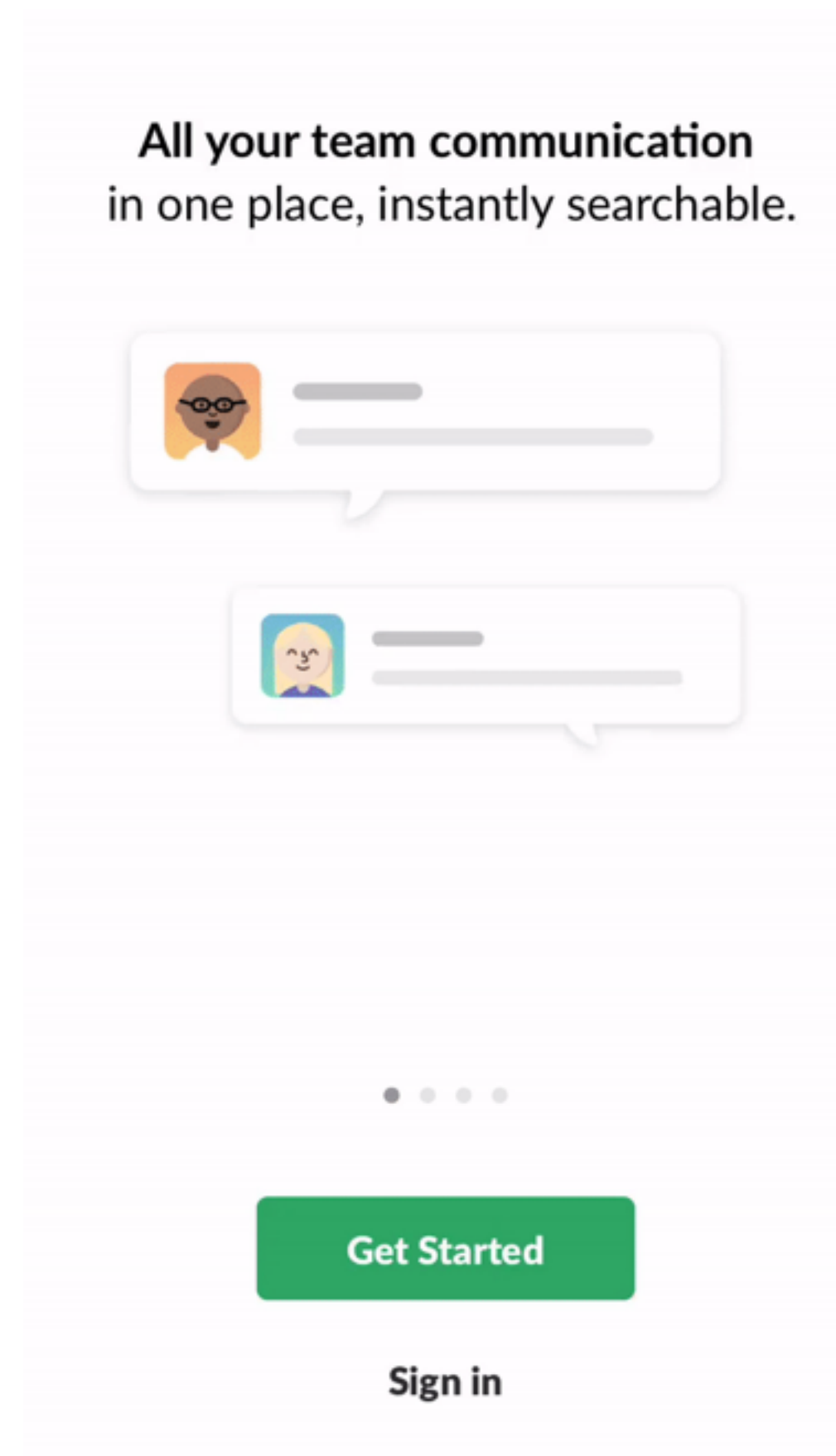
Mobile challenges

Onboarding (initial experience)

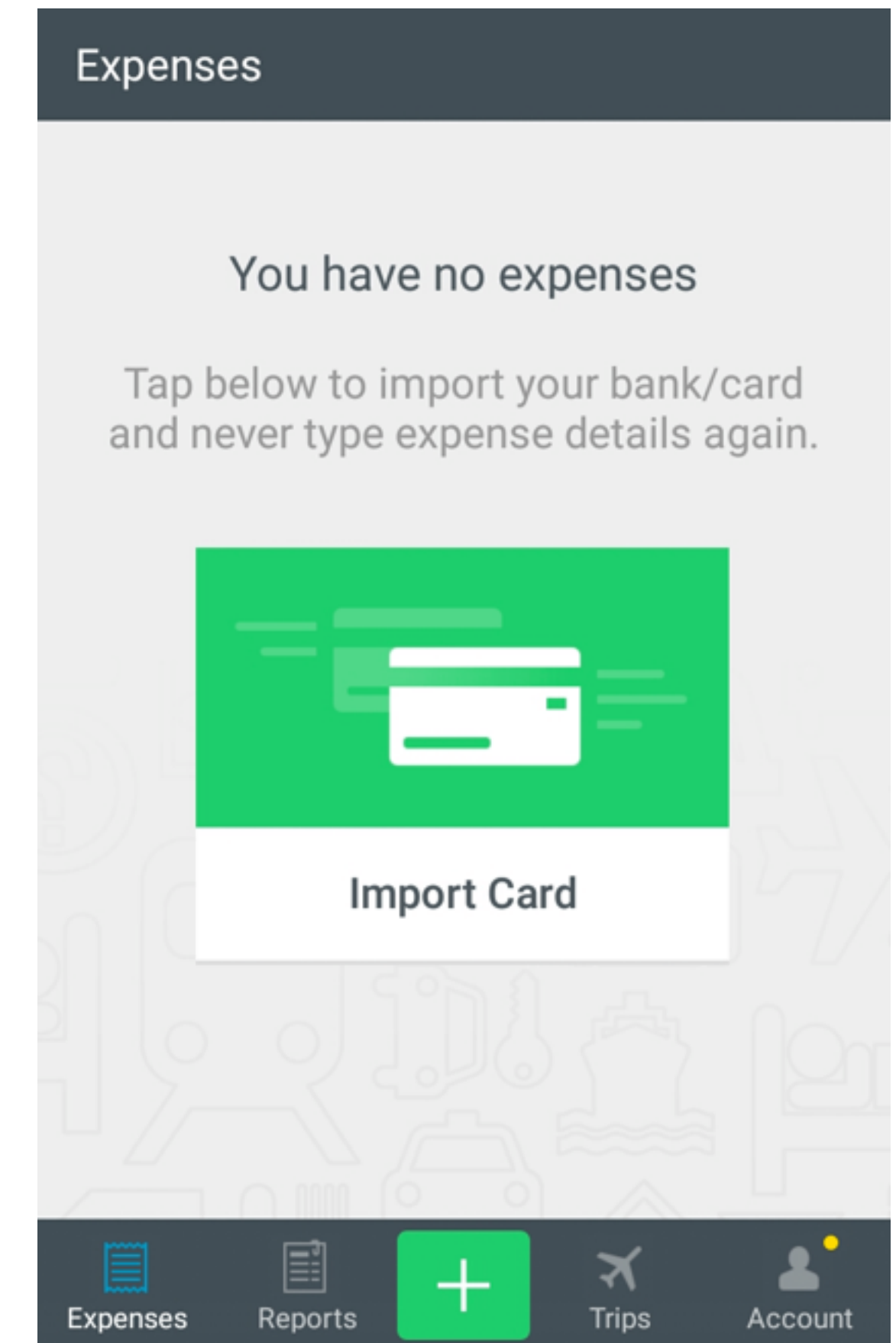
Fierce competition for apps: 75% are opened exactly once.



no sign-in blockers



start-up cards



empty states

Speed

Don't rely on network consistency

Load layout ASAP

Clear loading state

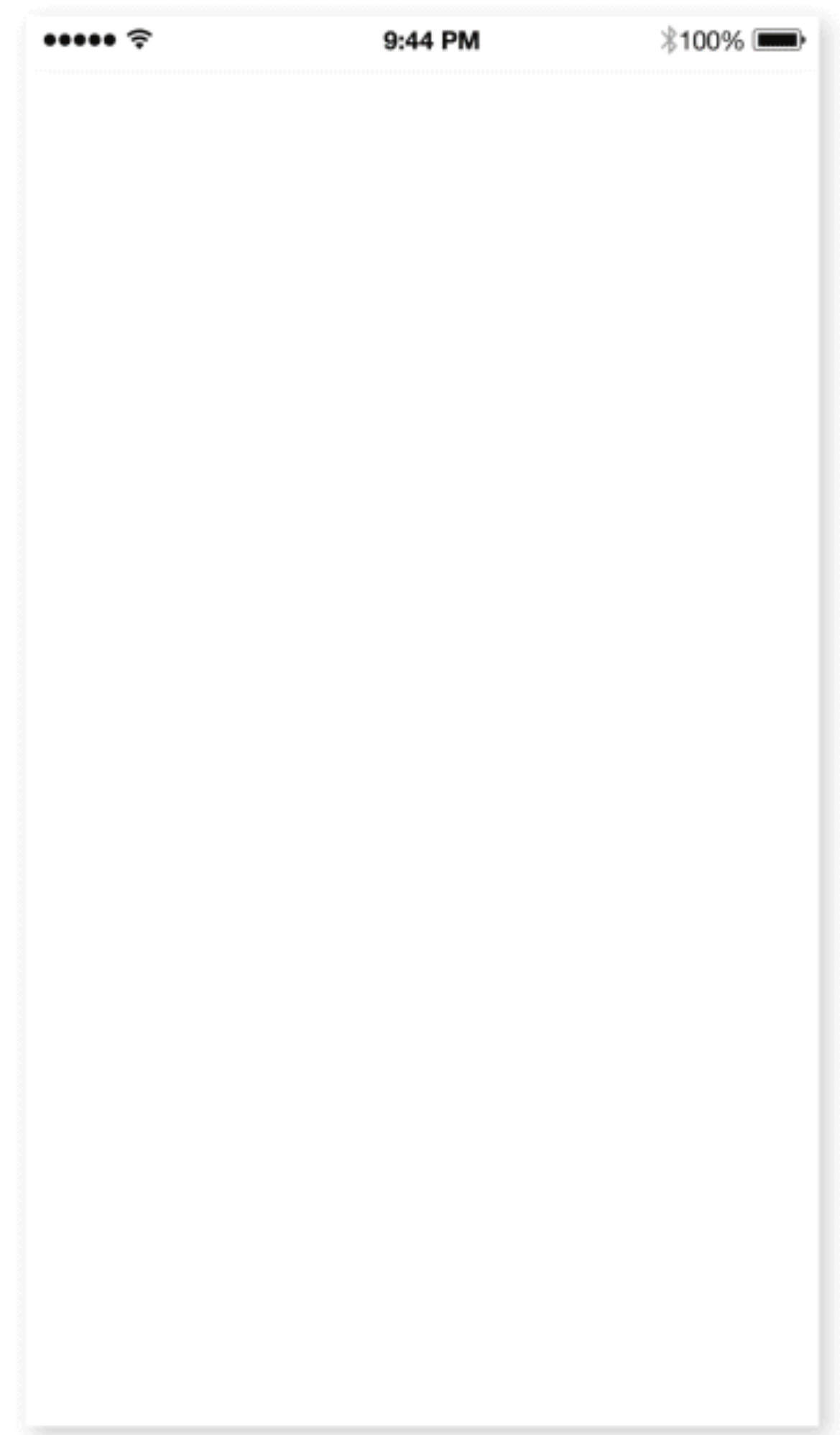
Distract

Skeleton screens

 Skeleton Screen Animation

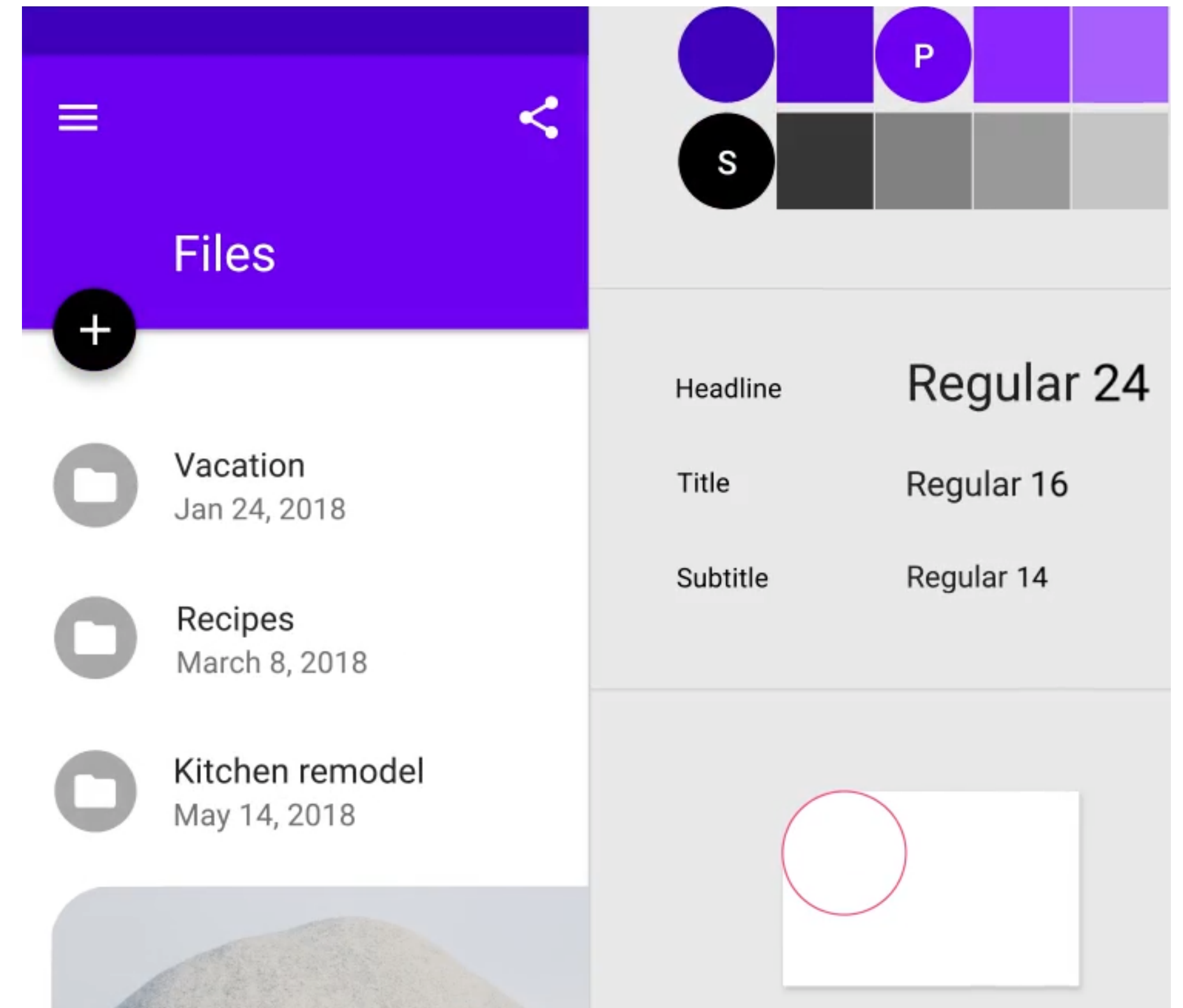
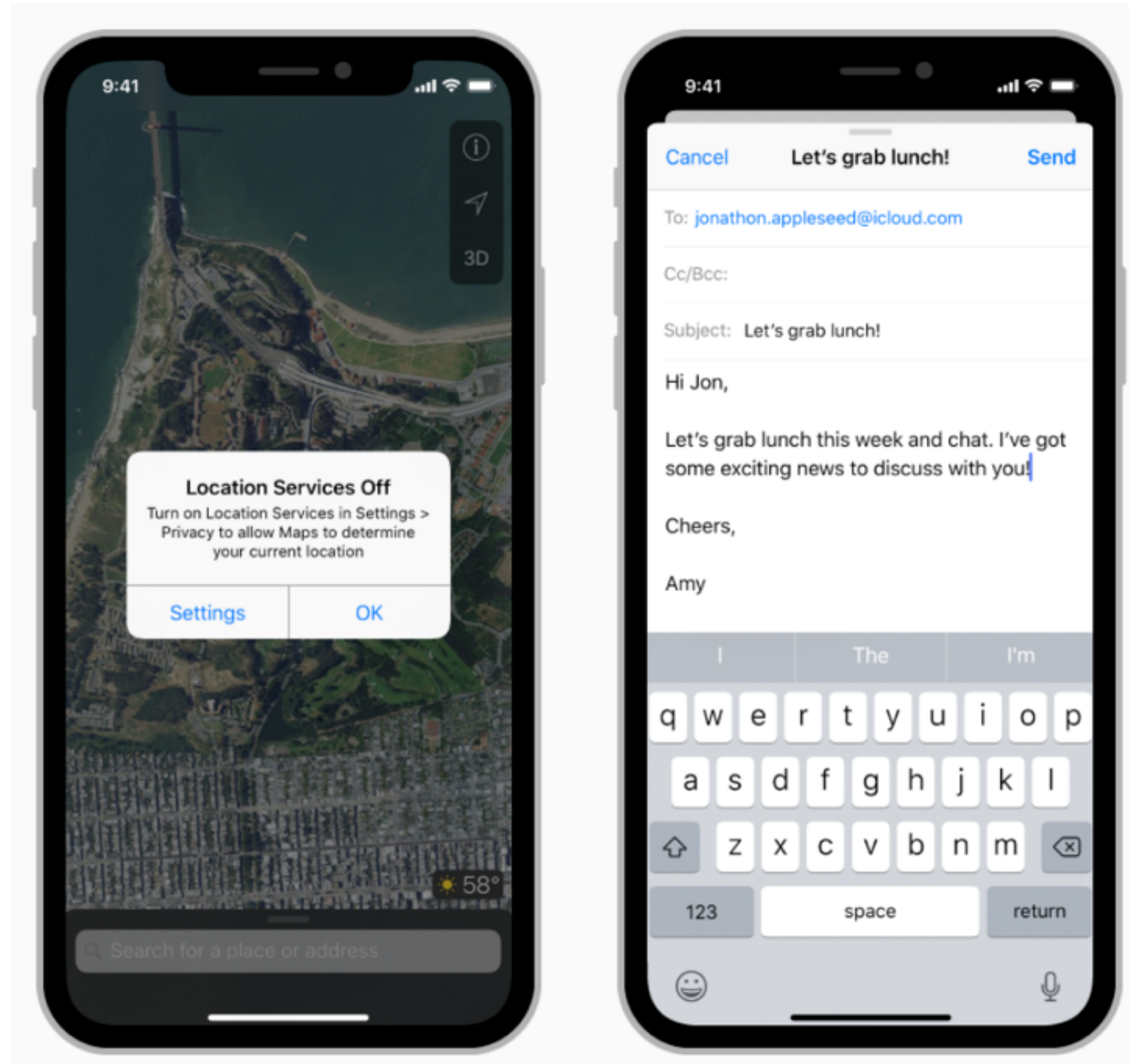


 Basic Loading Animation



TANDEM SEVEN

Respect platform guidelines



Design Systems

Design systems

Designers are rarely:

- Designing **alone**
- Designing **from scratch**
- Designing **once**

Need a way to codify and align design assets, steps, and principles.

A **design system** is a set of tools & guidelines for designing across products and platforms in the same product family.

A design system should be consistent, self-contained, reusable, accessible, and robust.

Design system components

Design language: Brand identity, guiding principles, voice & tone, styles (colour, layout, typography, iconography)

Guidelines and best practices: ways of verifying the design system is correct and built on universal principles

Components and patterns: atomic blocks of design (widgets, buttons, dialog boxes, screens) and the step-by-step sequences in which they're deployed.

System processes and management: adhering to, changing, and maintaining the design system

Design language

Brand:

- Vision & design principles
- Voice, tone, terminology, and writing
- Logo & brand identity

Styles and tokens:

- Colour (contrast, function, scheme, dark mode)
- Layout (units, grids, breakpoints, spacing, composition)
- Typography (typefaces, size, weight, hierarchy)
- Iconography

Vision & design principles



Core Values

Our values reflect those of a business started by a band of climbers and surfers, and the minimalist style they promoted. The approach we take toward product design demonstrates a bias for simplicity and utility.

Build the best product

Our criteria for the best product rests on function, repairability, and, foremost, durability. Among the most direct ways we can limit ecological impacts is with goods that last for generations or can be recycled so the materials in them remain in use. Making the best product matters for saving the planet.

Cause no unnecessary harm

We know that our business activity—from lighting stores to dyeing shirts—is part of the problem. We work steadily to change our business practices and share what we've learned. But we recognize that this is not enough. We seek not only to do less harm, but more good.

Use business to protect nature

The challenges we face as a society require leadership. Once we identify a problem, we act. We embrace risk and act to protect and restore the stability, integrity and beauty of the web of life.

Not bound by convention

Our success—and much of the fun—lies in developing new ways to do things.



The principles

1. Concepts from the product's subject domain (for example, systems management) should be central and apparent in the software design.
2. Keep it simple.
3. Optimize the design for the most frequent or important tasks.
4. Make the interface accessible and visible to users.
5. Use proper default values when supporting complex tasks.
6. Be flexible.
7. Keep your users informed and in control by providing informative and timely feedback tailored to the current situation.
8. Things that look the same should behave in the same way, and an action should always produce the same result.
9. Provide the ability to undo and redo actions.
10. Make your application predictable by using industry standard user interface conventions wherever possible.
11. Always keep your target users in mind as the product is designed.
12. Avoid adding features just so they can be ticked off a list.
13. Design your user interface so that it can be localized for other geographies without redesigning the interface.
14. Consider persons with disabilities when designing your applications.
15. Design the application so that contextual help is available to users when they need it.
16. Bring objects to life through good visual design.
17. Create user interfaces that promote clarity and visual simplicity.

PATAGONIA / IBM

Voice, tone, and vocabulary

Voice (content and personality) and tone (how voice is conveyed)

OUR VOICE, TONE, & AUDIENCE

When writing for Salesforce, our voice is always:

- Honest: Trust is our #1 value, and we're truthful in our writing.
- Clear: Our writing is concise and easy to understand.
- Fun: We're dedicated to conversational, upbeat language.
- Inspiring: We help people live their best lives, and our writing harnesses that genuine emotion.

On-brand voice is active, direct, and clear.

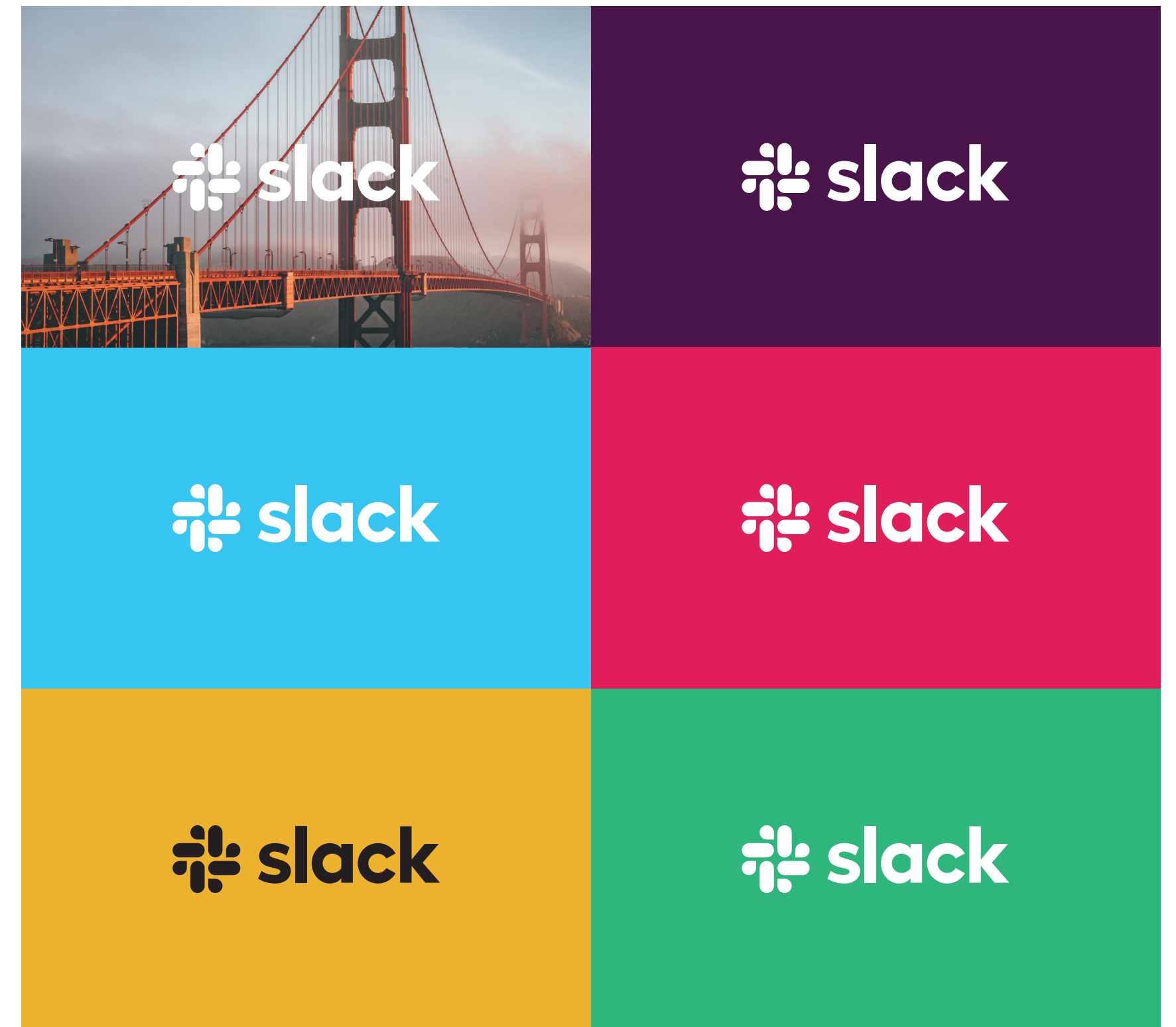
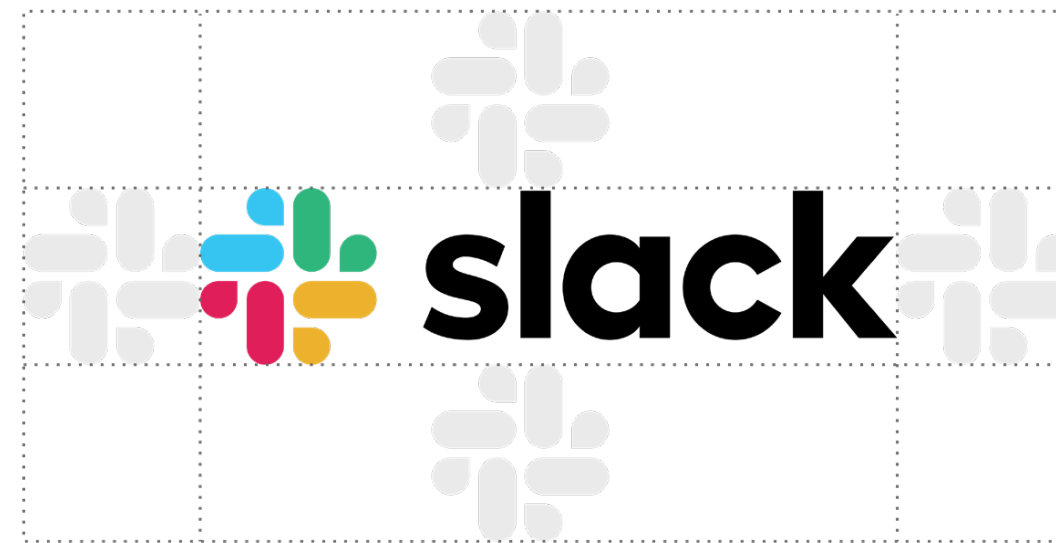
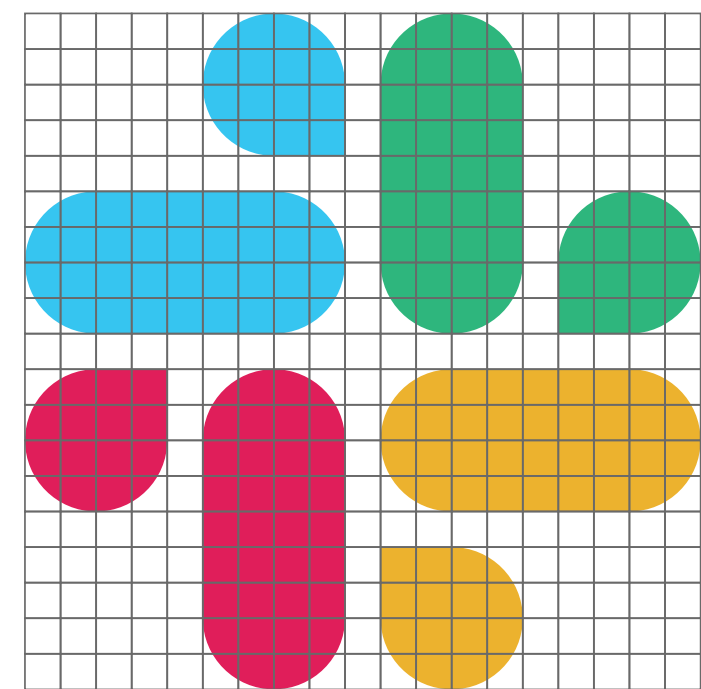
- Boost sales with Salesforce.
- Boost sales and grow your business with Salesforce.

Off-brand voice is passive, or overly complicated.

- Sales will be boosted with Salesforce.
- By utilizing Salesforce, sales will be optimized and organizational growth will be positively impacted.

SALESFORCE

Logo and identity



Colour

White

HEX ffffff

CMYK 0-0-0-0

RGB 255-255-255

Black

PMS Black

CMYK 0-0-0-100

RGB 29-28-29

HEX 1D1C1D

Aubergine

PMS 261

CMYK 68-95-33-22

RGB 74-21-75

HEX 4A154B

Blue

PMS 298

CMYK 65-10-2-0

RGB 54-197-240

HEX 36C5F0

Green

PMS 2250

CMYK 79-2-75-0

RGB 46-182-125

HEX 2EB67D

Yellow

PMS 7409

CMYK 4-33-98-0

RGB 236-178-46

HEX ECB22E

Red

PMS 214

CMYK 13-100-36-0



RGB 224-30-90

HEX E01E5A





		B	12	20	37	50	67	80	90	95	W
		TYPOGRAPHY									
BACKGROUND	W	AAA 21	AAA 16.6	AAA 12.6	AA 6.4	AA18 3.9	DNP 2.3	DNP 1.6	DNP 1.2	DNP 1.1	
	95	AAA 18.7	AAA 14.8	AAA 11.2	AA 5.7	AA18 3.5	DNP 2	DNP 1.4	DNP 1.1		DNP 1.1
	90	AAA 16.6	AAA 13.2	AAA 10	AA 5.1	AA18 3.1	DNP 1.8	DNP 1.2		DNP 1.1	DNP 1.2
	80	AAA 13	AAA 10	AAA 7.8	AA18 4	DNP 2.4	DNP 1.4		DNP 1.2	DNP 1.4	DNP 1.6
	67	AAA 9.1	AAA 7.2	AA 5.5	DNP 2.8	DNP 1.7		DNP 1.4	DNP 1.8	DNP 2	DNP 2.3
	50	AA 5.3	AA18 4.2	AA18 3.2	DNP 1.6		DNP 1.7	DNP 2.4	AA18 3.1	AA18 3.5	AA18 3.9
	37	AA18 3.2	DNP 2.5	DNP 1.9		DNP 1.6	DNP 2.8	AA18 4	AA 5.1	AA 5.7	AA 6.4
	20	DNP 1.6	DNP 1.3		DNP 1.9	AA18 3.2	AA 5.5	AAA 7.8	AAA 10	AAA 11.2	AAA 12.6
	12	DNP 1.2		DNP 1.3	DNP 2.5	AA18 4.2	AAA 7.2	AAA 10	AAA 13.2	AAA 14.8	AAA 16.6
	B		DNP 1.2	DNP 1.6	AA18 3.2	AA 5.3	AAA 9.1	AAA 13	AAA 16.6	AAA 18.7	AAA 21

Colour



Text

	<code>\$govuk-text-colour</code>	<code>#0b0c0c</code>
	<code>\$govuk-secondary-text-colour</code>	<code>#626a6e</code>

Links

	<code>\$govuk-link-colour</code>	<code>#1d70b8</code>
	<code>\$govuk-link-hover-colour</code>	<code>#003078</code>
	<code>\$govuk-link-visited-colour</code>	<code>#4c2c92</code>
	<code>\$govuk-link-active-colour</code>	<code>#0b0c0c</code>

Focus state


	<code>\$govuk-focus-colour</code>	<code>#ffdd00</code>
	<code>\$govuk-focus-text-colour</code>	<code>#0b0c0c</code>

Only use this colour to indicate which element is focused on. For example, when a user tabs to an element with their keyboard.

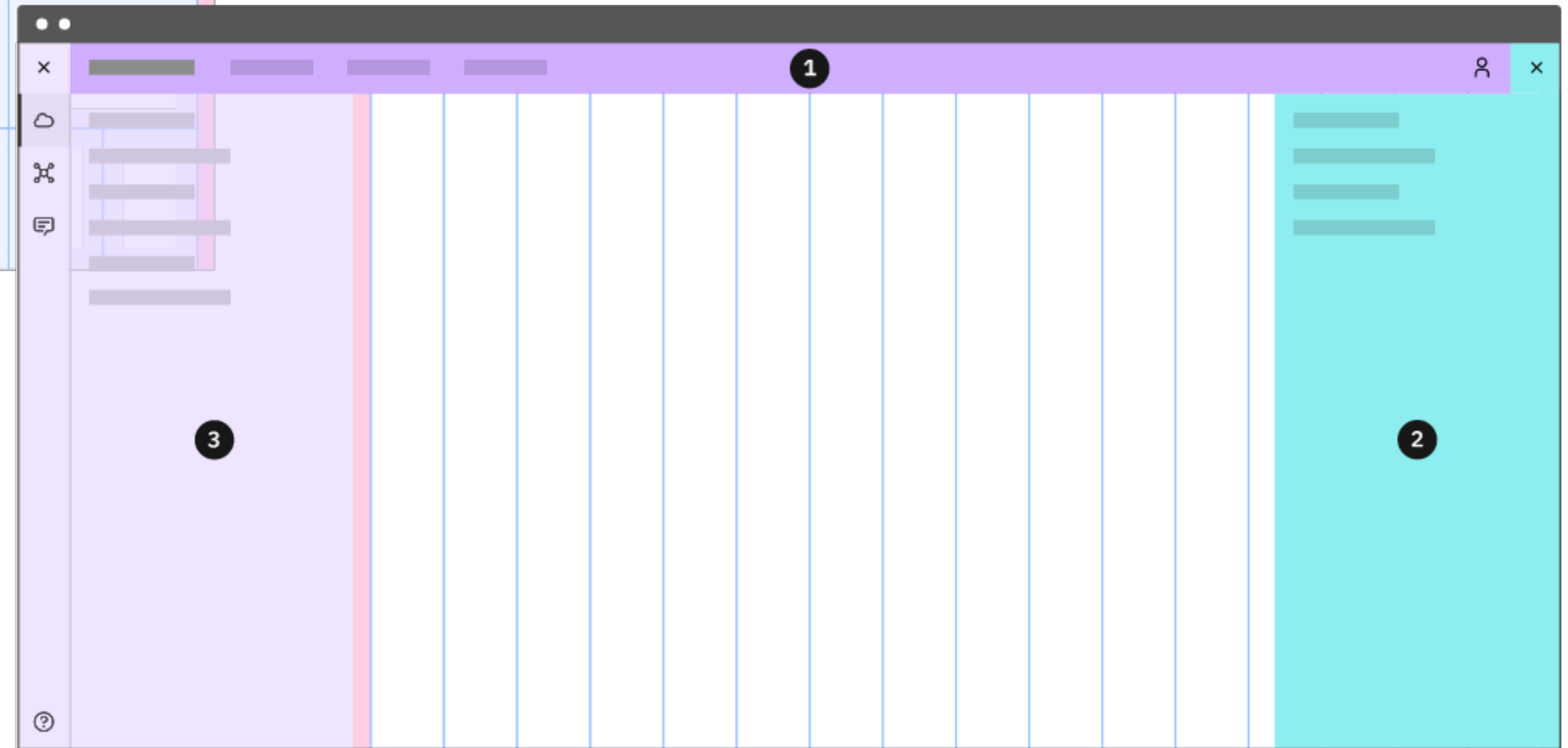
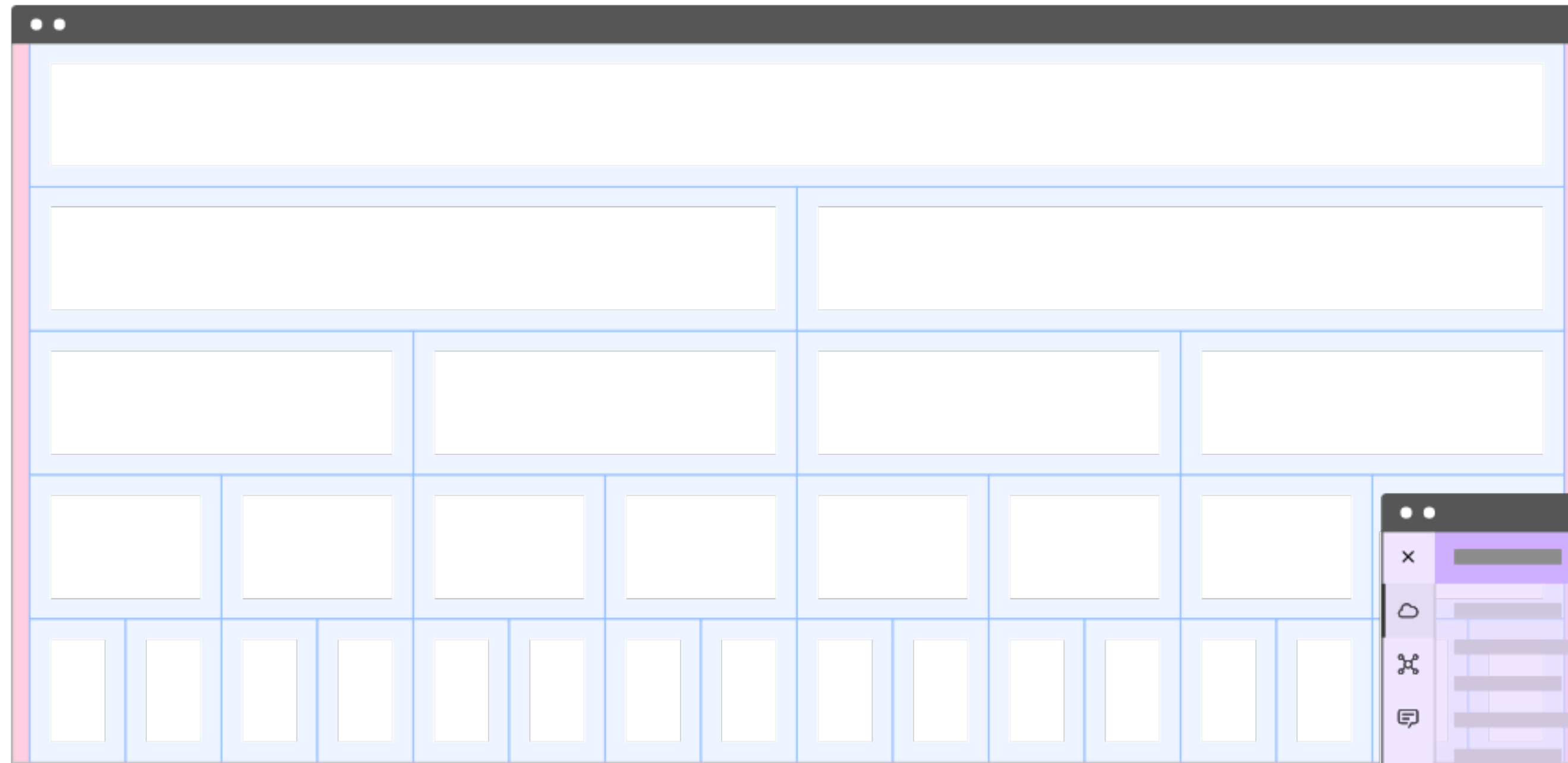
Error state

	<code>\$govuk-error-colour</code>	<code>#d4351c</code>	Use for error messages
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Brand colour

	<code>\$govuk-brand-colour</code>	<code>#1d70b8</code>
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Layout



IBM

Typography

H1
Larsseit Bold, 36/38

A better way to work

H2
Larsseit Bold, 24/28

Simpler, more pleasant and more productive

H3
Larsseit Bold, 18/21

The kind of thing you don’t know you need, but once you have it, you can’t live without it. It feels like the natural evolution of work.

H4
Larsseit Bold, 12/15

After all, every organization needs a little Slack.

P
Circular Book,
Style Set 2,
Optical Kerning,
-10 Tracking
7/9

There is an enormous and heretofore largely unmet demand for an easier way to coordinate and align people. That demand is why Slack is here today, and why Slack is being adopted all over the world. Email is the default coordinating point for communications and the go-to platform enterprise software developers use when they need to reach human beings, but inside a company it works poorly. Enormous flows of information course through it, but each person has only a tiny view. Email holds rich history: all the decisions made, questions answered and information shared, but if you’re new to a company, or just in the

wrong inbox, you have access to none of it. Rather than inboxes, all those messages are organized into channels. Channels can correspond to anything - projects, teams, planning, office locations, business units, functional areas, temporary channels for things like planning an offsite. Unlike email, Slack was designed from the bottom-up to integrate with the software tools you use every day. Whatever tools you already use, Slack vastly increases the value of your software investment, by making it easier to access, easier to act upon, and easier to share.

Share channels with companies and businesses you regularly work with to bring all the right people into the same space.

GET STARTED

Hero P
Circular Book,
Style Set 2,
Optical Kerning,
-10 Tracking
10/14

Quote Mark
Circular Book, 36

“

Pull Quote
Larsseit Thin, 18/21

We believe that the advantages are so great that a shift to working on Slack, or something like it, is inevitable.

Attribution
Circular Bold/
Book Italic, 7/9

Marcel Gherkins
Spokesperson, Slack

SLACK

Iconography

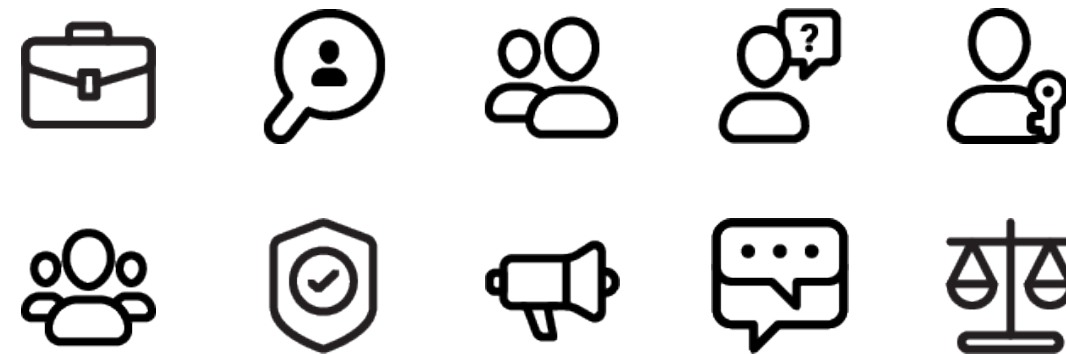
Slack icons are used across different brand touchpoints from marketing to environment to product.

They provide symbolism, conceptual clarity and visual interest in simplistic shapes and forms.

Slack.com



Roles



Events



Miscellaneous



Guidelines and best practices

Guidelines indicate how the design handles specific situations, e.g.,:

- Onboarding (initial experience)
- Accessibility
- Notifications & permissions

Best practices are used to get designers and developers up to speed on the core UI and UX principles used in the design system, e.g.,

- Heuristics
- Readings and resources

Components and patterns

Components are the atomic building blocks of a design: graphic assets, code snippets, pre-built widgets, animations, etc.

- Navbar, banner, card, carousel, modal, tab, popup
- Checkbox, radio, textbox, dropdown, button
- Notification, tooltip, toast (mini-notification)

Patterns indicate the common idioms and sequences used in the UI

- Navigation (e.g., tabs, hamburger, accordion, breadcrumb, home)
- Input (e.g., preview, settings, expandable long text, in-place edit)
- Social (avatar, profile, inbox, contacts, sharing, react, invite)
- Data (sort, filter, search, FAQ)

System process and management

Design ecosystem (tools, plugins, versioning requirements, how to contribute to the design system)

Development and technical requirements (version control, commit messages, unit testing, coding style)

Management and performance of the design system itself (roadmap and milestones, analytics, error logging, communications and updates)

Workshop

A website or application may want to implement a reporting form for accessibility issues.

When a user encounters an issue, they can tell the developer team what was wrong so the team knows what to fix.

Explore and conform to a design system

1. Build this form as a **wireframe**
2. Include all appropriate **widgets** (e.g., labels, dropdowns, buttons)
3. Select appropriate **language**
4. Use **components** and instances
5. Pick a **design system** and download templates
6. **Apply** the design system to your wireframe, choosing colour, size, layout, text, and tone
7. **Submit** PDF

Accessibility issue reporting form

Category / Type / WCAG Principle

Severity scale (1-5)

Issue description

Any assistive devices?

Permission to contact reporter

Reporter contact

Submit and cancel buttons

Questions?

Further reading

designsystemchecklist.com

<https://uxdesign.cc/everything-you-need-to-know-about-design-systems-54b109851969>

<https://www.invisionapp.com/inside-design/guide-to-design-systems/>

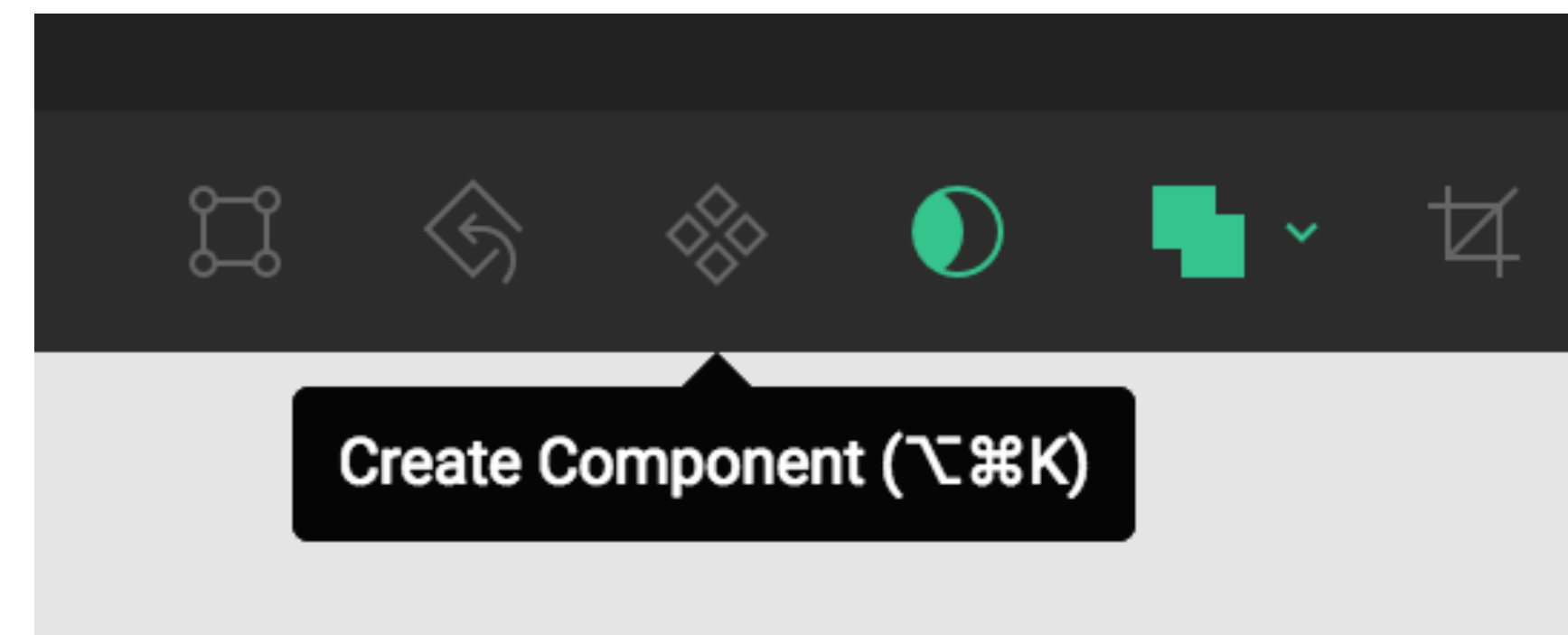
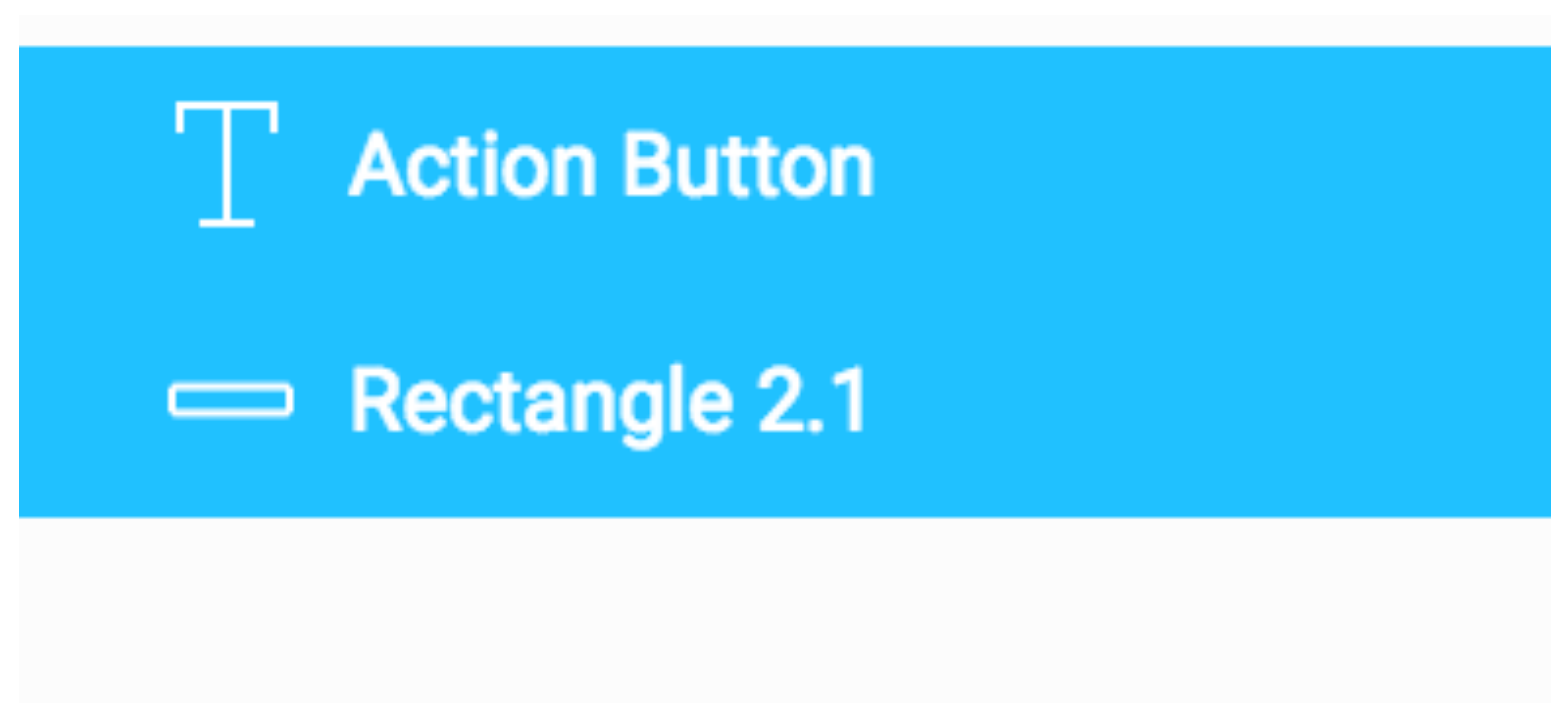
<https://designsystemsrepo.com/design-systems/>

Components

A component is a group that represents a template for other objects to follow (e.g., a button).

If you want all buttons of a certain type to share size and text features, you can set a group of objects as a component.

To create a component in Figma, select the layers that comprise it and click the “Create component” button in the top toolbar:



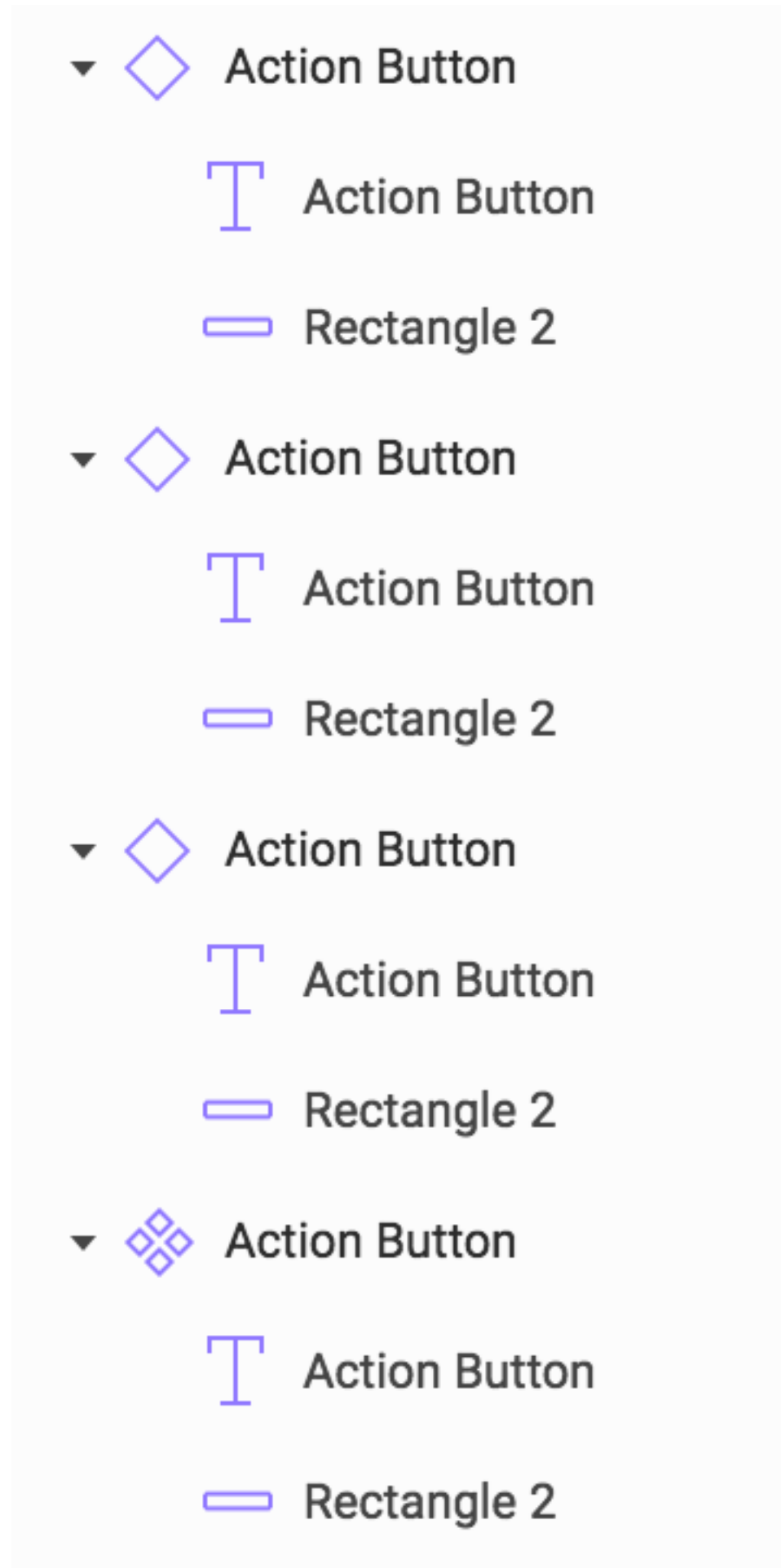
FIGMA

Components and instances

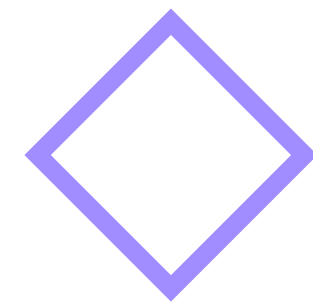
When a component is duplicated or pasted, it produces an instance that shares all its properties with the component.

If a property is changed in the component, it changes for all instances as well.

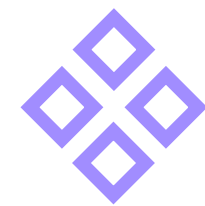
If a property is changed in a specific instance, it changes only for that instance and **disconnects** that property from the component.




Components and instances



instance




component

▼  Action Button

 Action Button

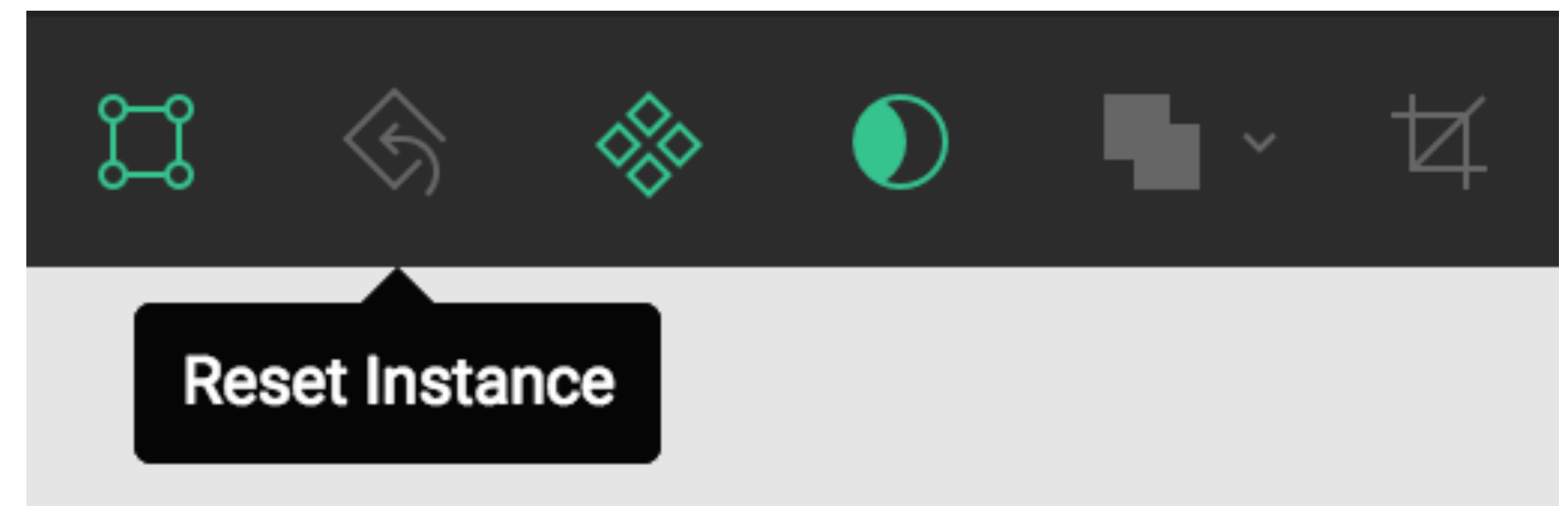
 Rectangle 2

▼  Action Button

 Action Button

 Rectangle 2

To re-connect an instance's property to the component, select the instance and click "Reset instance"



FIGMA

Credits

Developed with materials from Adrian Petterson