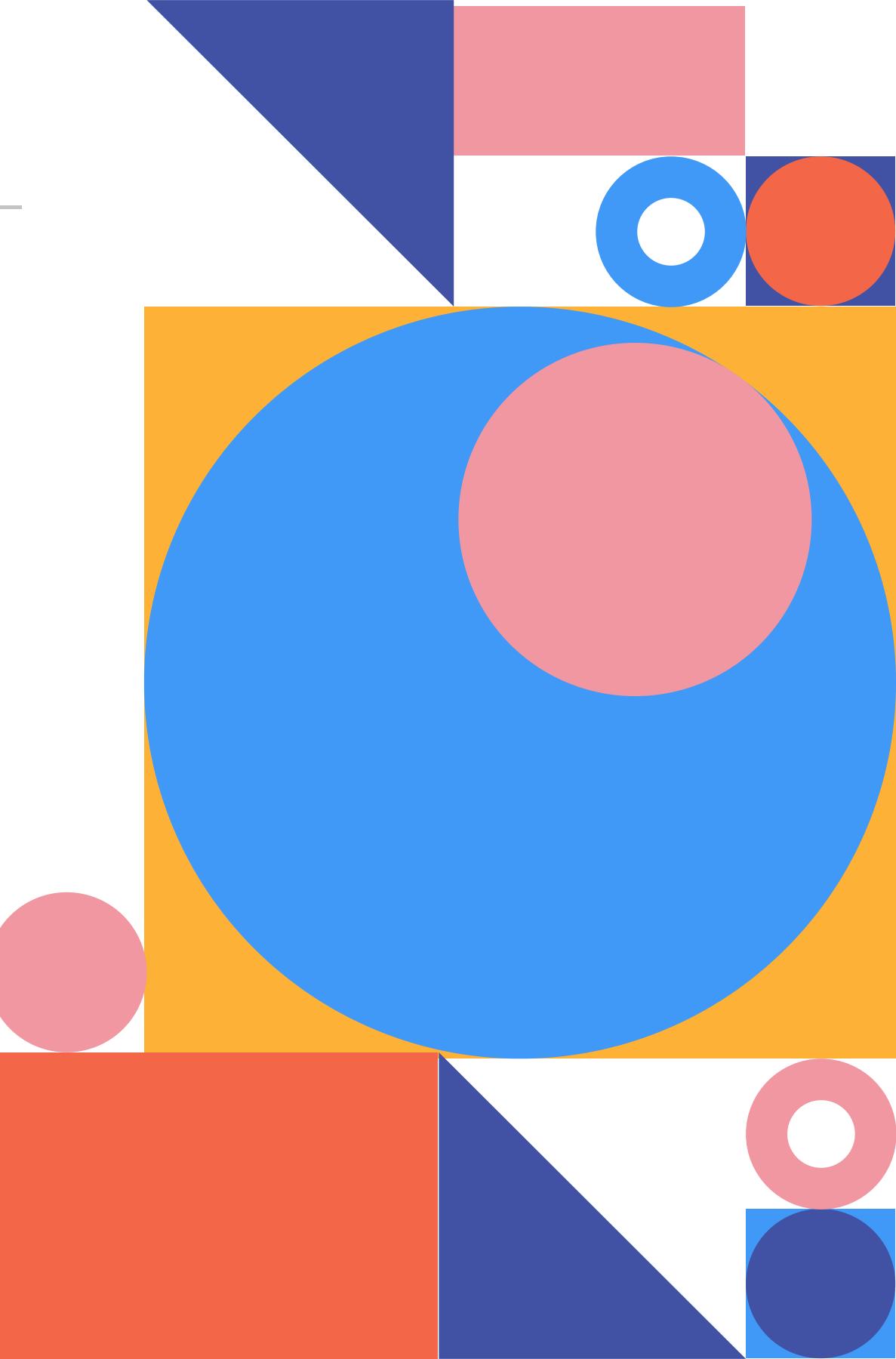

Design Systems

Emma Bostian



About me

Emma Bostian

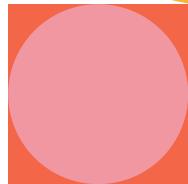
Software Engineer @ LogMeln

American in Germany

Ladybug Podcast & JS Party

Stack Overflow, Ultimate Courses, & Dev.to

LinkedIn Learning



What we'll cover



Design Systems
Design
Figma
Styled Components
Animations
Storybook
Tools & Resources

What this course is

This course is a high-level introduction to design systems. It will teach you the foundational skills your team needs to build a set of reusable components and standards.

What this course is not

This course is not a comprehensive overview to design systems. There is no industry-standard for what a design system truly is, and as a result it can be interpreted differently at different companies.



Course Information

Repo:

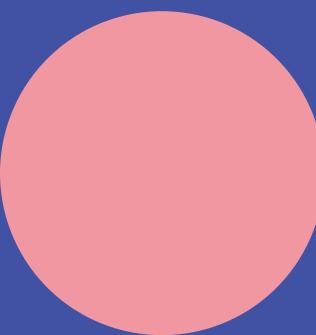
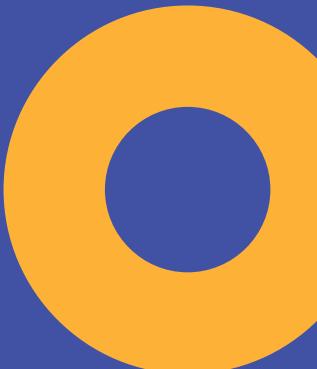
<https://github.com/emmabostian/fem-design-systems>

Docs: <https://fem-design-systems.netlify.com/>



Design Systems

The internet was not originally intended to host large-scale social and enterprise applications.



Components

Allow us to maintain consistent user interfaces which are accessible by nature



What is a design system?



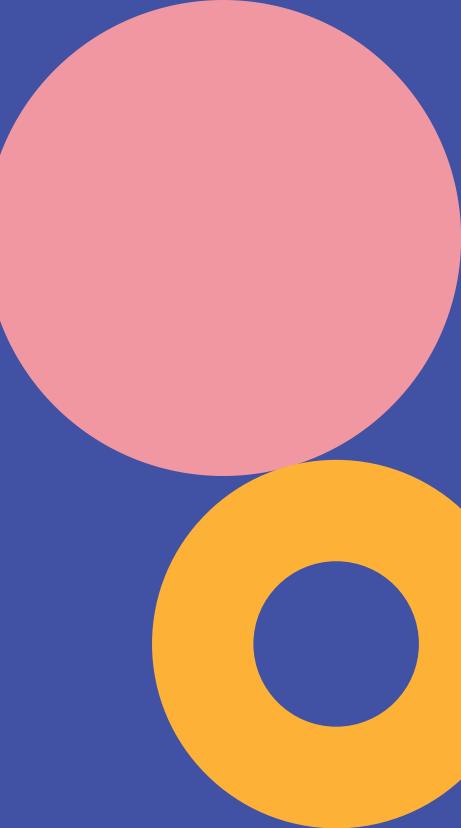
UI Kit
Color
Typography
Grid
Iconography

What is a design system?

Component library
Style Guide



A design system
is all
of these things.

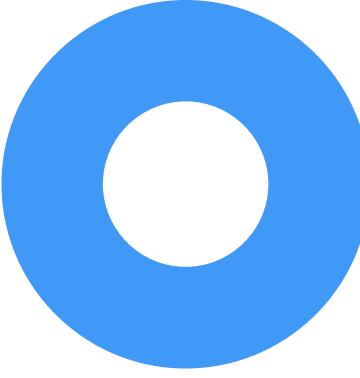


Why do design systems matter?

Accessibility

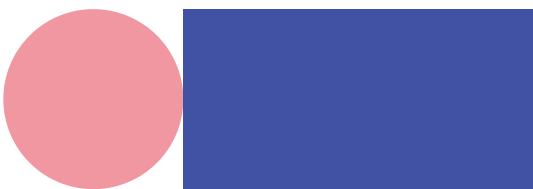
Everyone, regardless of circumstance, should be able to achieve the same results from your application.

Why do design systems matter?

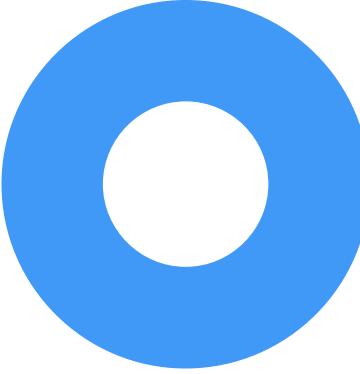


Consistency

Your products should look and feel like they're part of the same brand identity.

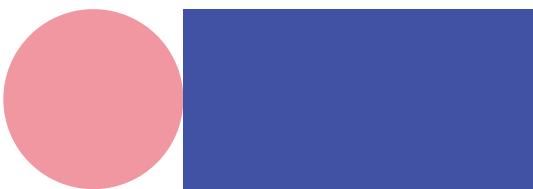


Why do design systems matter?

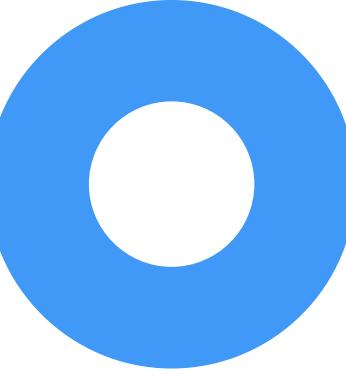


Trickle-down updates

The style can be updated in one component within the system, and will propagate to each product .

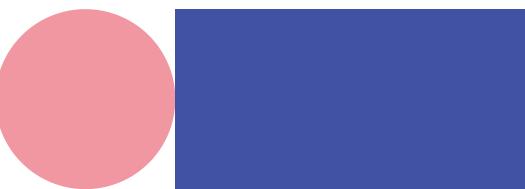


Why do design systems matter?

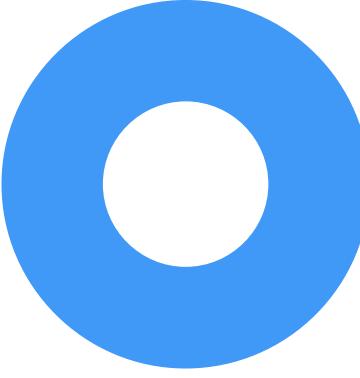


Responsiveness

Our web applications must account for different screen resolutions and devices.

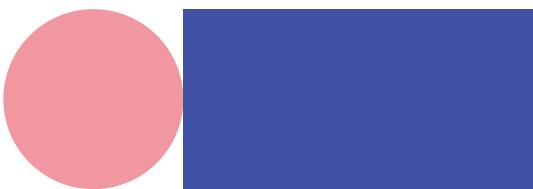


Why do design systems matter?



Onboarding

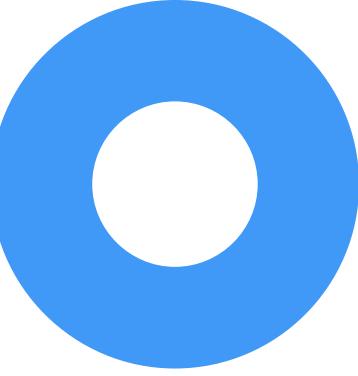
There is one place for new team members to go to get all of the information they need to get started.



Why do design systems matter?

Flexibility

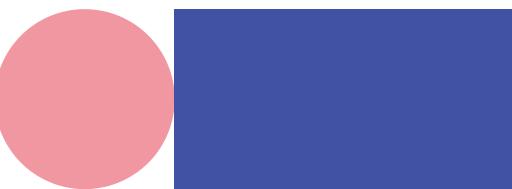
A design system must serve a variety of use cases, while setting parameters on what exactly those use cases can be.



Why do design systems matter?

Speed

Once your design system has been established, time to production is greatly reduced.



Drawbacks of design systems

Time

Design systems take time to
build.

Drawbacks of design systems

Evolution

A design system is never complete. It's a product serving products.

Drawbacks of design systems

Maintenance

A design system is a living, breathing product which has lifecycles and requires maintenance.

Drawbacks of design systems

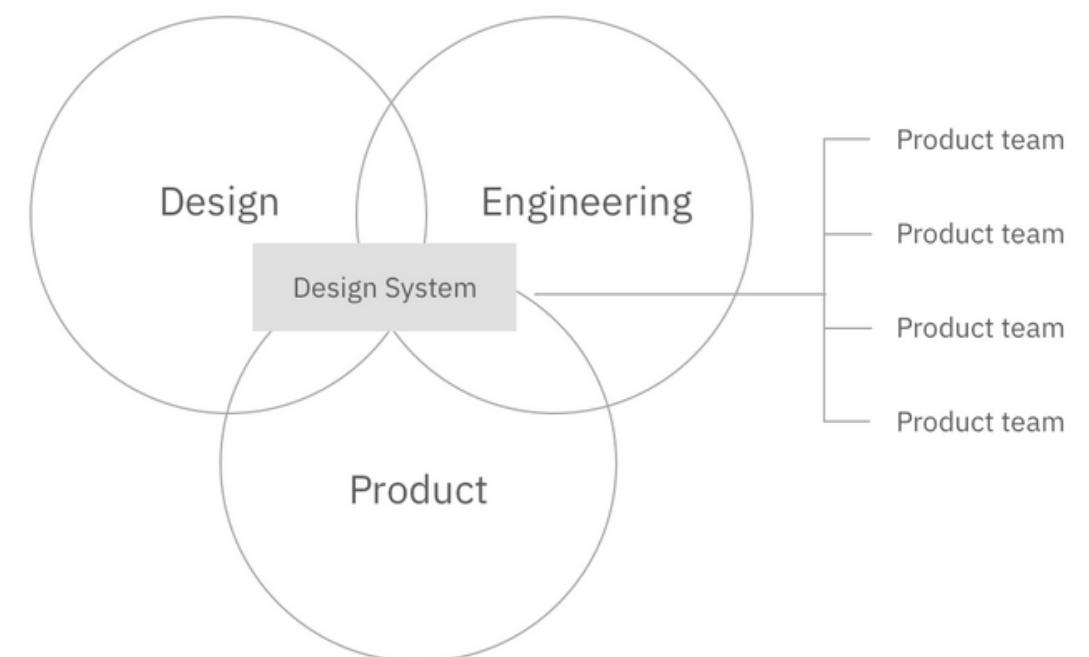
Investment

We need designers, engineers,
and product managers to ensure
the success of the system.

Team structure

Centralized Model

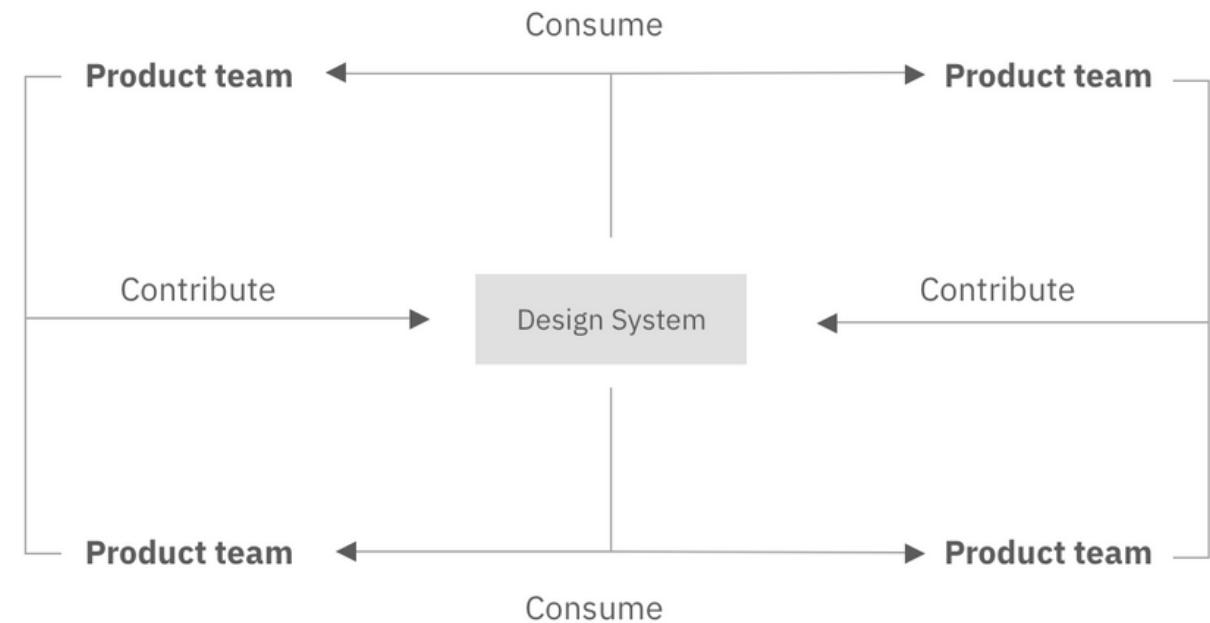
- Define the foundation & identity of the system
- Have veto power over the system
- Manage & create the UI Kit, component library, and style guide



Team structure

Distributed Model

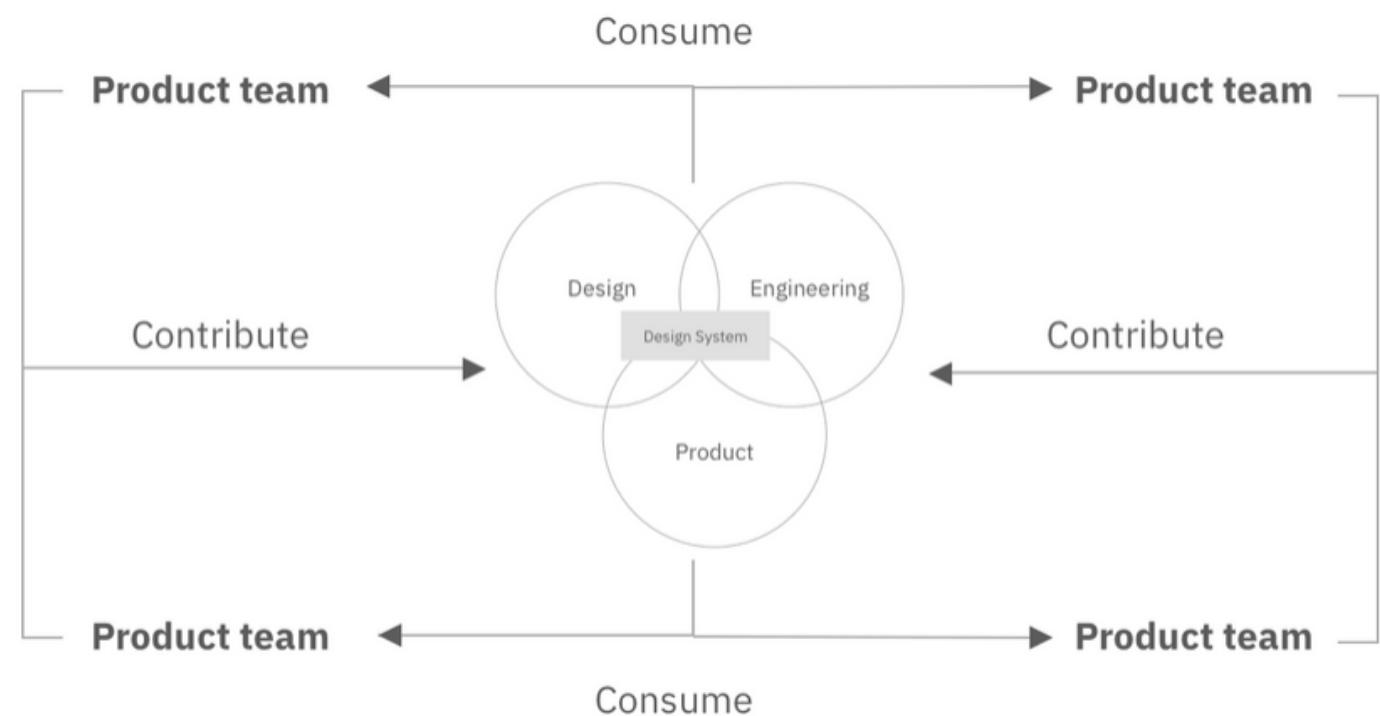
- No centralized core team
- Built & maintained by the consuming teams
- Instills a sense of ownership
- Influenced by many vantage points
- Less down time



Team structure

Hybrid Model

- Combines the centralized and distributed models
- Decisions are made quickly



Who are
design
systems for?



“If a design system is by a company, then it’s for the company. It might also be open source, but any ol’ random developer who wants to use it isn’t the target audience.”

- *Chris Coyier*





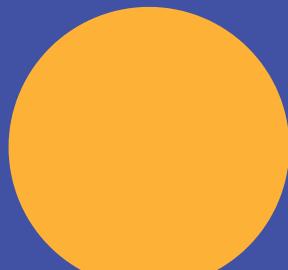
Nathan Curtis

Design Systems Coach



And You Thought
Buttons Were Easy...

→ [Read the blog post here!](#)

A solid orange circle is positioned in the lower right quadrant of the slide, partially overlapping the blue background.

Primary button

Secondary button

Tertiary button

Secondary button

Tertiary button

Primary button

Primary button

Primary button

Primary button

Primary button

Secondary button

Tertiary button



↓ Primary button

Secondary button

Tertiary button



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Primary button

Primary button

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Primary button

Secondary button

Secondary button

Tertiary button

Tertiary button



⤵ Primary button

⤵ Primary button

Primary button

Primary button

Primary button

Primary button

Tertiary button



↓ Primary button

Primary button

Primary button

Primary button

Primary button

Primary button

Tertiary button



↓ Primary button

Primary button

Primary button

Primary button

Primary button

Primary button

How many buttons is that?

3 default buttons (primary, secondary, tertiary)

3 status buttons (error, warning, status)

4 status icon buttons

+ 4 default icon buttons

14 buttons

How many buttons is that?

3 default buttons (primary, secondary, tertiary)

3 status buttons (error, warning, status)

4 status icon buttons

+ 4 default icon buttons

14 buttons X 5 states (i.e. hover) X 2 sizes

How many buttons is that?

3 default buttons (primary, secondary, tertiary)

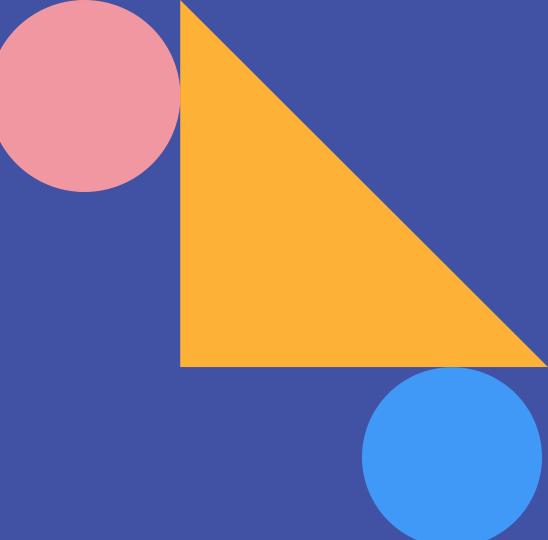
3 status buttons (error, warning, status)

4 status icon buttons

+ 4 default icon buttons

14 buttons X 5 states (i.e. hover) X 2 sizes

= 140 button combinations per theme...



How much does that cost...?

\$300 per hour X 200 hours

Designer

\$100 per hour



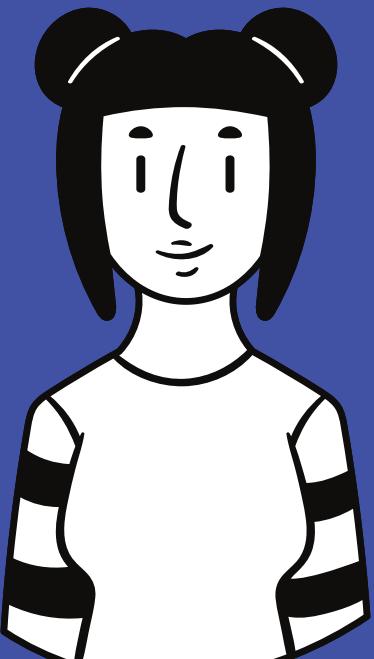
Engineer

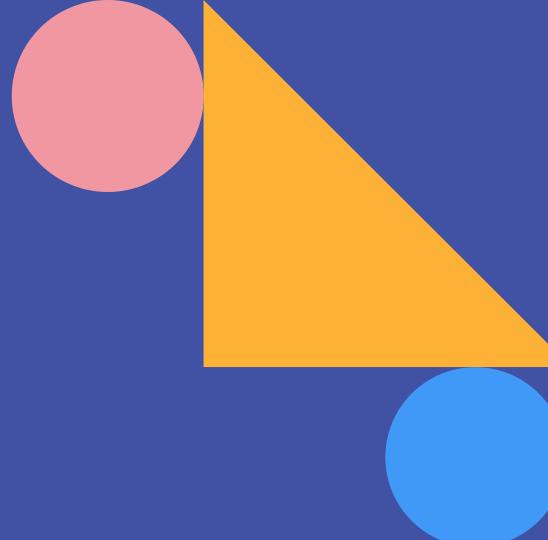
\$100 per hour



Quality Assurance

\$100 per hour



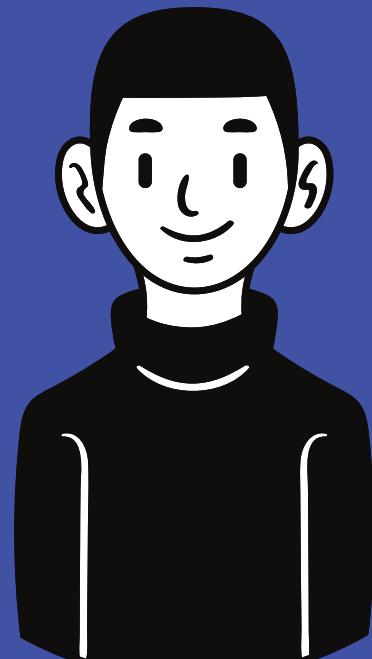


How much does that cost...?

$$\$300 \text{ per hour} \times 200 \text{ hours} = \$20,000$$

Designer

\$100 per hour



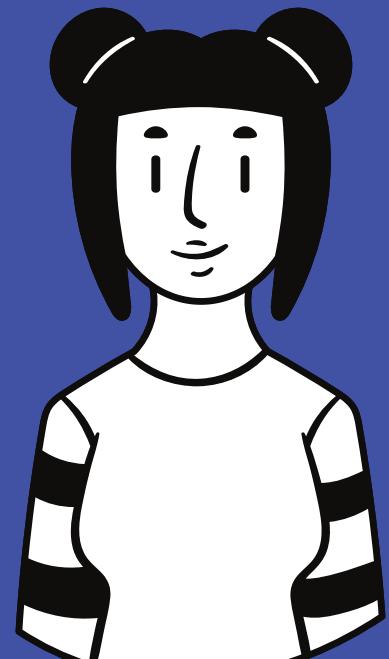
Engineer

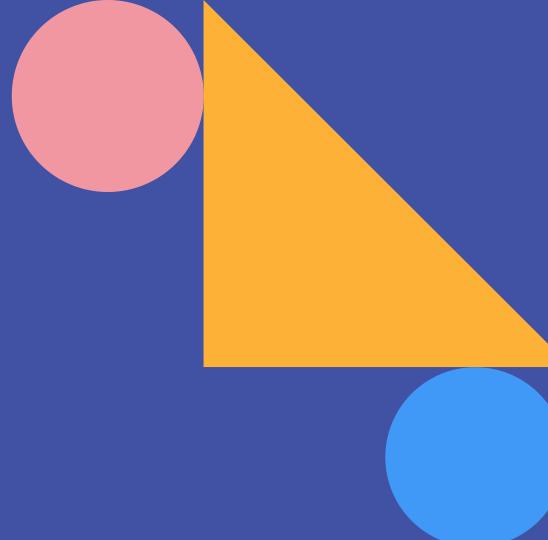
\$100 per hour



Quality Assurance

\$100 per hour





How much does that cost...?

\$300 per hour X 200 hours = \$20,000

50 teams X \$20,000 = \$1 million ... *on buttons*

Designer

\$100 per hour



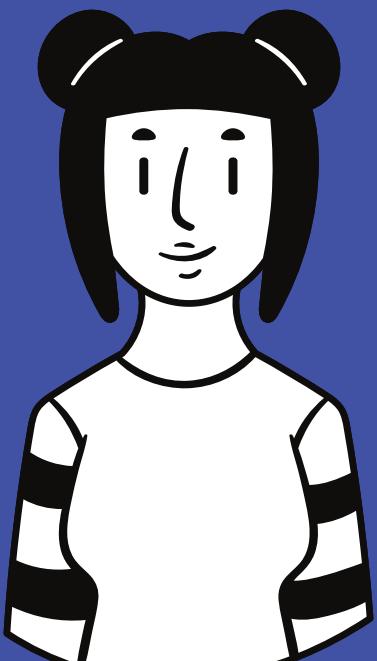
Engineer

\$100 per hour



Quality Assurance

\$100 per hour



Three pillars of design systems

Design Language

The set of standards and assets which guide the creation of a suite of products underneath a brand.

Component Library

Set of components which turn the design language and UI Kit into living, breathing code.

Style Guide

The documentation for the design language, UI Kit, and component library.

Design language

The personality of a brand and its corresponding design assets.

Foundation

Color
Typography
Grid
Spacing
Iconography
Illustrations
Motion

UI Kit

Buttons
Text Fields
Modals
Dropdowns
Navigation
Footer

Component Library

Can be built with many
different frameworks and
libraries

Frameworks

Vue
React
Angular
Ember

Technologies

CSS Pre-processors
CSS-in-JS
Animation libraries
Testing libraries

Style Guide

The documentation for the design language, UI Kit, and component library.

Technologies

Storybook

Invision

Gatsby

React Styleguidist

Building a design system

1. Define your design principles
2. Conduct a UI audit
3. Create your checklists
4. Define your workflows

Design principles

Design principles are the grounding values which drive the creation of your products.

"Bold, optimistic, and practical."

What do you want your users to feel when using your product?

UI Audit

Compile all components, in every variation and state, in one place.

Group these components by functionality.

AirBnb UI Audit

The screenshot displays a grid of UI components from the AirBnb website, each labeled with its category:

- INPUT**: A search bar with placeholder "Try 'Algarve'" and a dropdown menu showing "Wedekind".
- LINK**: A navigation bar with links: Become a host, Saved, Trips, Messages, Help, and a "Read more" button.
- CARD**: A card for a boat ride listing details: BOAT RIDE - AMSTERDAM, Early morning - Canals all the canals, \$42 per person, and a 4.5-star rating.
- CAROUSEL**: A horizontal carousel of six images showing different room types.
- FILTER**: A filter section with tabs: Dates, Guests, Home type, Price, Instant Book, Trip type, and More filters.
- PHOTO GALLERY**: A grid of twelve images showing interior rooms: Living room 1, Living room 2, Full kitchen, Bedroom 1 - Queen bed, Bedroom 2 - 2 single beds, Bedroom 3 - Queen bed, Bedroom 4 - Queen bed, Bedroom 5 - Double bed, Bedroom 6 - Queen bed, Bedroom 7 - King bed, Full bathroom 1, and Full bathroom 2.
- REVIEW**: A review by Sarah from 14 days ago: "Absolutely beautiful home, just as pictured and described. The grounds outside far outshine anything inside, which is rare. The views of the..." followed by a "Read more" link.
- BUTTON**: A row of four buttons: CONTACT (pink), Save (red), Get started (blue), and another Get started button.
- BADGE**: A teal badge with the word "NEW".
- DROP DOWN BUTTON**: A dropdown menu titled "Select your language" with English selected, showing other options like Deutsch, Espanol, etc.
- PAGINATION**: A set of small navigation arrows.
- NOTIFICATION**: A "Messages" section with a "All Messages (74)" button and three notifications: Regis (Jan 28), Paul (Jan 14), and Marc (12/16/2018).
- TABLE**: A table of messages with columns: Avatar, Name, Date, and Action (Accepted or Pending). Examples include "Hi thank you! We're so excited!" from Regis on Jan 28 and "Wonderful thanks so much! See you soon!" from Paul on Jan 14.
- COMBO BOX**: A search bar with a "Search" icon and a "Recent searches" section listing: Amsterdam - Experiences (Feb 10 - 17), Amsterdam - Experiences (Feb 10 - 15), Amsterdam - Experiences (Feb 10 - 17), Damrakade 5, 1013 AP Amsterdam - Homes (Feb 12 - 15), and Kiel, Schleswig-Holstein, Germany - Homes Anytime (Feb 10 - 17).

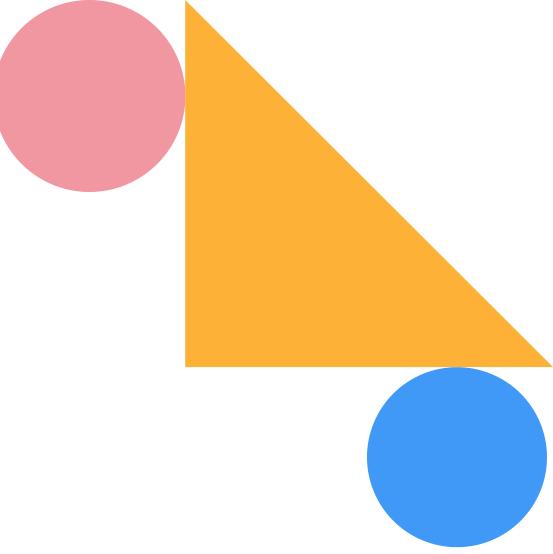
UI Audit

Prioritize the components which have the highest impact on unification of your products and are easily achievable.

AirBnb UI Audit

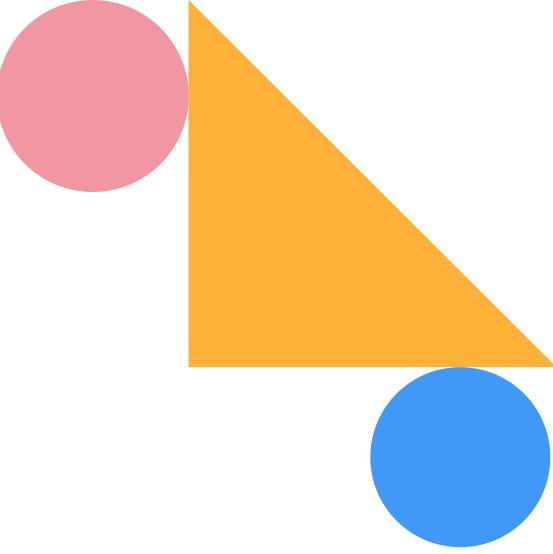
The screenshot displays a grid of UI components from the AirBnb website, each labeled with its name:

- INPUT**: A search bar with placeholder "Try 'Algarve'" and a dropdown menu showing "Wedekind".
- LINK**: A navigation bar with links for "Become a host", "Saved", "Trips", "Messages", and "Help", plus a "Read more" button.
- CARD**: A card for a "BOAT RIDE - AMSTERDAM" listing featuring a photo of a boat, the title, a short description, a price of "\$42 per person", and a 5-star rating.
- CAROUSEL**: A horizontal scrollable gallery of five images showing interior and exterior views of a property.
- FILTER**: A section with tabs for "Dates", "Guests", "Home type", "Price", "Instant Book", "Trip type", and "More filters".
- PHOTO GALLERY**: A grid of 12 thumbnail images showing various rooms of a house, labeled from "Living room 1" to "Full bathroom 2".
- REVIEW**: A review by Sarah from 14 days ago: "Absolutely beautiful home, just as pictured and described. The grounds outside far outweigh anything inside, which is rare. The views of the...". It includes a "Read more" link.
- BUTTON**: A row of four buttons: "CONTACT", "Save", "Get started", and another "Get started" button which is highlighted in blue.
- BADGE**: A teal badge with the word "NEW".
- DROP DOWN BUTTON**: A dropdown menu titled "Select your language" with "English" selected. Other options include Deutsch, Espanol, Français, Hrvatski, Italiano, Magyar, Nederlands, Norsk, Polski, and Português.
- PAGINATION**: A set of small navigation arrows for navigating through pages.
- NOTIFICATION**: A "Messages" section with a "All Messages (74)" button and a list of three messages from users Regis, Paul, and Marc.
- TABLE**: A table showing a list of messages with columns for "All Messages (74)", "From", "Subject", and "Status". One message from Regis is marked as "Accepted".
- COMBO BOX**: A search bar with a magnifying glass icon and a dropdown menu showing recent searches: "Amsterdam- Experiences", "Amsterdam- Experiences", "Amsterdam- Experiences", "Dorperkade 5, 1013 AP Amsterdam- Homes", and "Kielruehe, Germany- Homes".



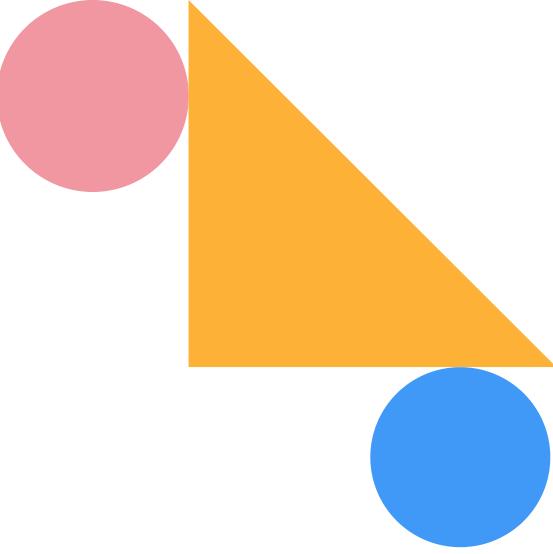
Prioritizing components

- Does this request embody our design principles?



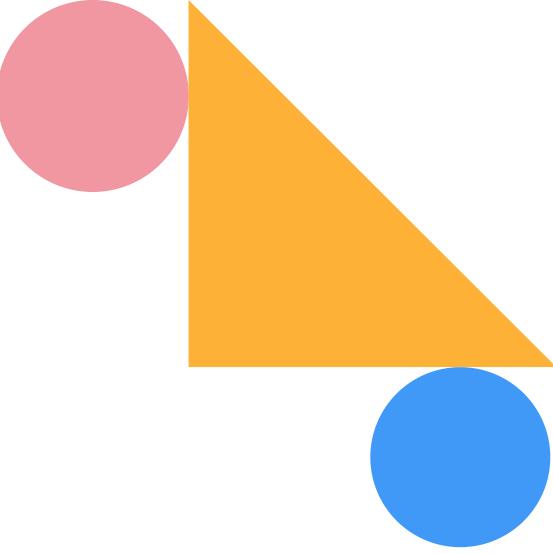
Prioritizing components

- Does this request embody our design principles?
- Does this request require a lot of design/development effort?



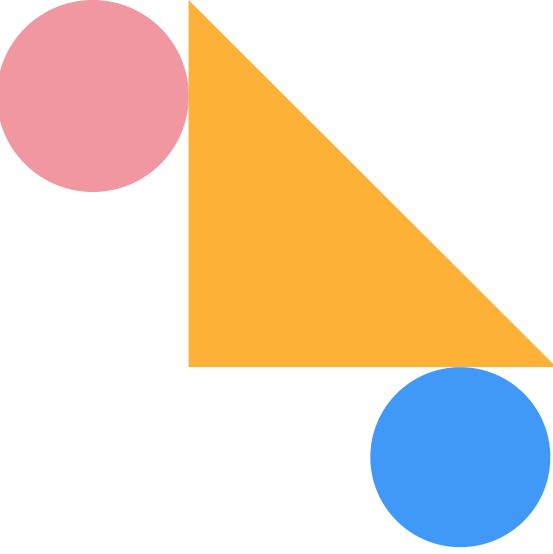
Prioritizing components

- Does this request embody our design principles?
- Does this request require a lot of design/development effort?
- Does this request come with a high risk to the success of our product?



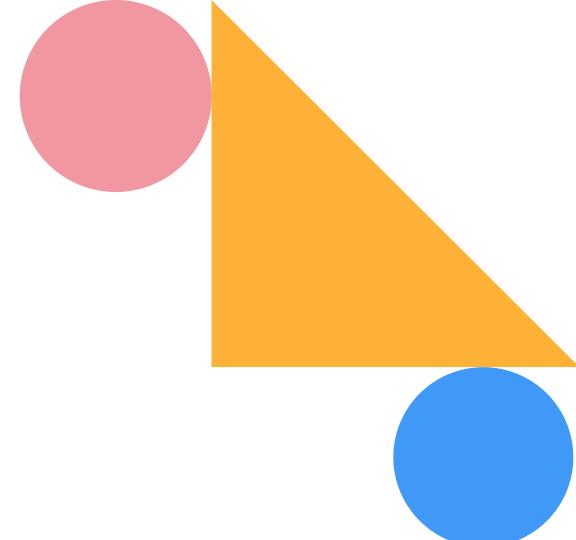
Prioritizing components

- Does this request embody our design principles?
- Does this request require a lot of design/development effort?
- Does this request come with a high risk to the success of our product?
- Does this request coincide with the product roadmap?



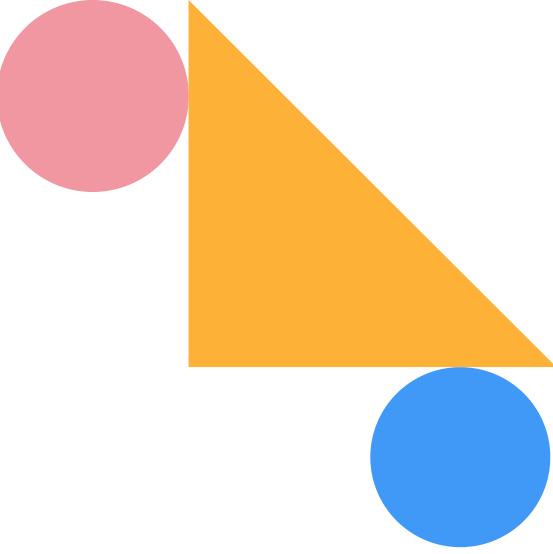
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- Does this request improve the user experience of our products?



Prioritizing components

- Does this request embody our design principles?
- Does this request require a lot of design/development effort?
- Does this request come with a high risk to the success of our product?
- Does this request coincide with the product roadmap?
- Does this request improve the user experience of our products?
- Are we confident in this request or will it need to be revisited in the near future?



Prioritizing components

- Does this request embody our design principles?
- Does this request require a lot of design/development effort?
- Does this request come with a high risk to the success of our product?
- Does this request coincide with the product roadmap?
- Does this request improve the user experience of our products?
- Are we confident in this request or will it need to be revisited in the near future?
- Is this request technically feasible?

Adoption metrics

Metrics which indicate that a component has high priority.

Impact
Identity
Confidence

Opposition metrics

Metrics which indicate that a component has lower priority.

Maintenance
Risk
Effort

Calculating priority

Sum the scores from your adopter questions and your opposer questions, then find the mean score by dividing by the number of total questions for each metric.

We take these individual scores and find the mean across all survey participants.

These will become your (X,Y) coordinates which help you determine the priority of your components.

Calculating individual scores

impact + identity + confidence = individual adopter total

individual adopter total / # adopter questions = **individual adopter**

maintenance + risk + effort = individual opposer total

individual opposer total / # opposer questions = **individual opposer**

Calculating mean scores

individual adopter totals / # survey participants = **adopter score**

individual opposer totals / # survey participants = **opposer score**

(X, Y)
(adopter, opposer)

Prioritizing components

By visualizing the priority of each component on this prioritization graph, we can easily determine what to spend time on.

Priority 3

Weak adopter / weak opposer

Finish priority one and two components before tackling.

Priority 1

Strong adopter / weak opposer

Immediate adoption.

Parking lot

Weak adopter / strong opposer

Priority 2

Strong adopter / strong opposer

Try to mitigate the opposition metrics prior to adopting.

Buttons

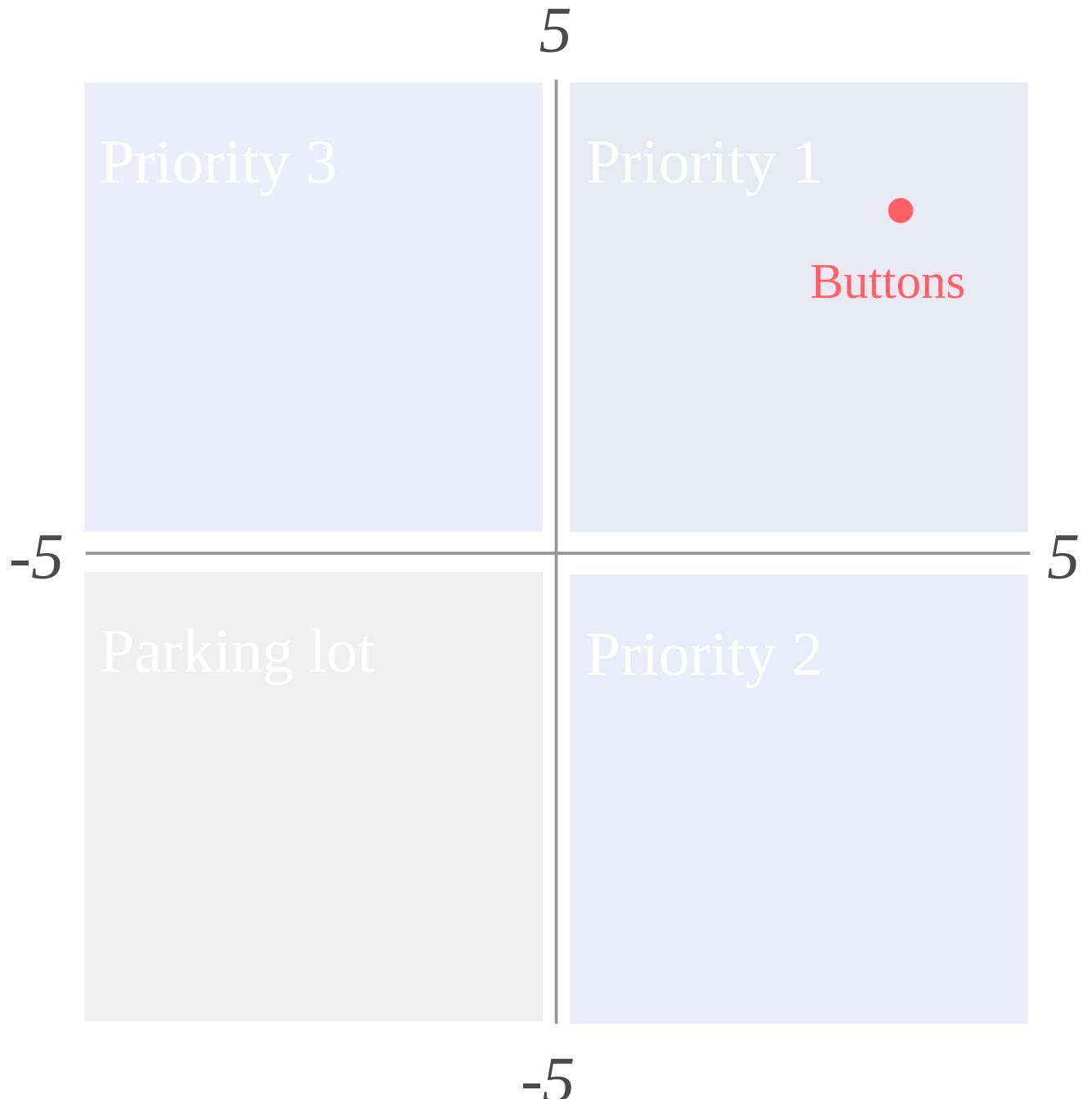
Buttons will have a high impact because they'll unify your products underneath your brand identity.

But buttons also require a lot of maintenance and effort and might have to be re-visited several times before a finalized design is found.

(adopter, opposer)

(4, 4)*

* On a 5-point axis



Accordions

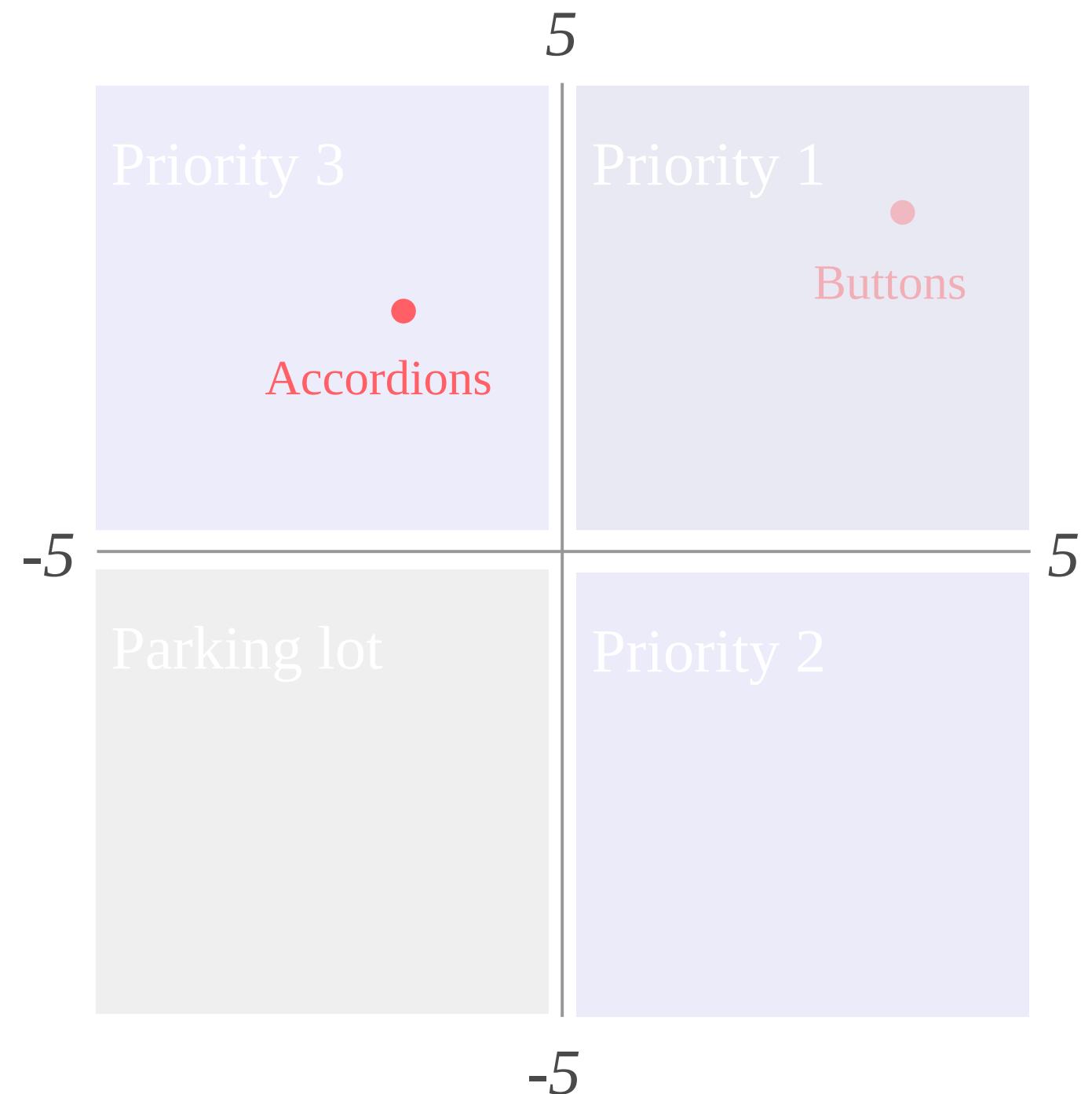
Accordions won't have a high impact because they're not used often throughout the UIs.

But accordions will take a lot of effort to build and could have some associated maintenance.

(adopter, opposer)

(-2, 3)*

* On a 5-point axis



Design checklist

Accessibility

Can all users, regardless of circumstance, use this component?

Interaction

How should a component respond when a user interacts with it?

Context

How and where should this component be used?

Completion

Are all states, including neutral, hover, focus, and disabled, defined?

Content

What type of content does this component rely upon?

Customization

Are aspects of this component customizable? If so, how?

Screen Resolution

How does this component look on varying screen resolutions?

Development checklist

Accessibility

Can all users, regardless of circumstance, use this component?

Responsiveness

Our components must respond to browser window resizing and varying screen resolutions.

Completion

Does this component account for all aspects of the design?

Customization

Have we implemented all of the customizable aspects of this component?

Error Handling / Prop Validation

How do our components respond when something breaks?

Browser Compatibility

Do the technologies we use work across all supported browsers or must we include polyfills?

Common mistakes

Starting for scale

While the ability to scale is good, building your components for scale can be a detriment.

Only scale when needed.

Common mistakes

Educating before building

Educating your teams about your design system can negatively impact your rapport if there's nothing to use.

Common mistakes

Not discussing workflow

If you going to be collaborating on a design system, it's important to come to terms on a working model.

Common mistakes

Not documenting decisions

Design systems require a lot of investment and will often have lots of eyes on them.

Documenting decisions will save you and your team the headache of having to explain to each stakeholder why you're doing something a certain way.