

Getting to the glass

approaches to rendering views on the web

Phil Hawksworth, Netlify

Getting to the glass



Getting to the glass



JavaScript dates + Daylight saving

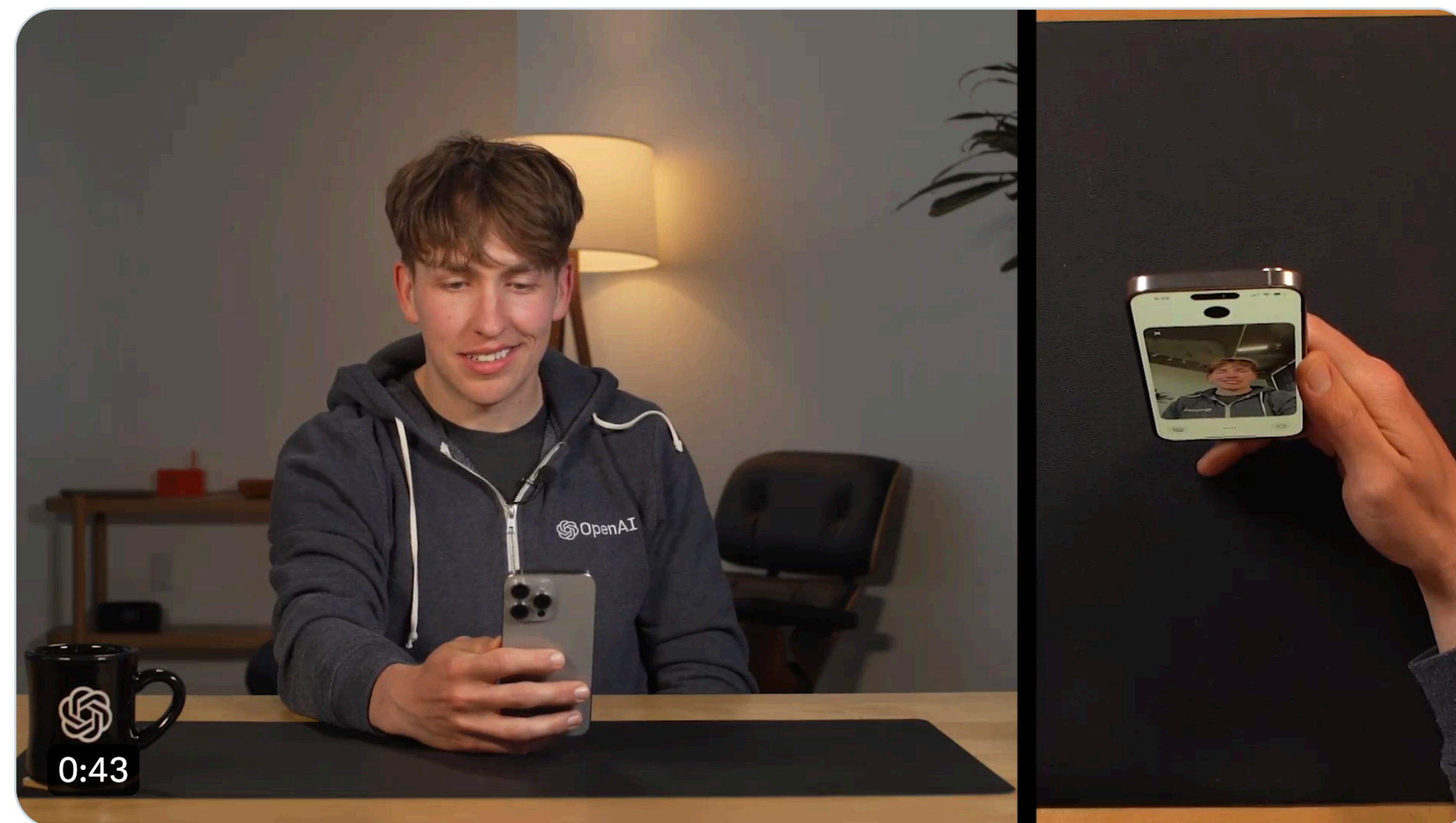
January 32th



Follow ...

Say hello to GPT-4o, our new flagship model which can reason across audio, vision, and text in real time: openai.com/index/hello-gp...

Text and image input rolling out today in API and ChatGPT with voice and video in the coming weeks.



Text and image input rolling out today in API and ChatGPT with voice and video in the coming weeks.





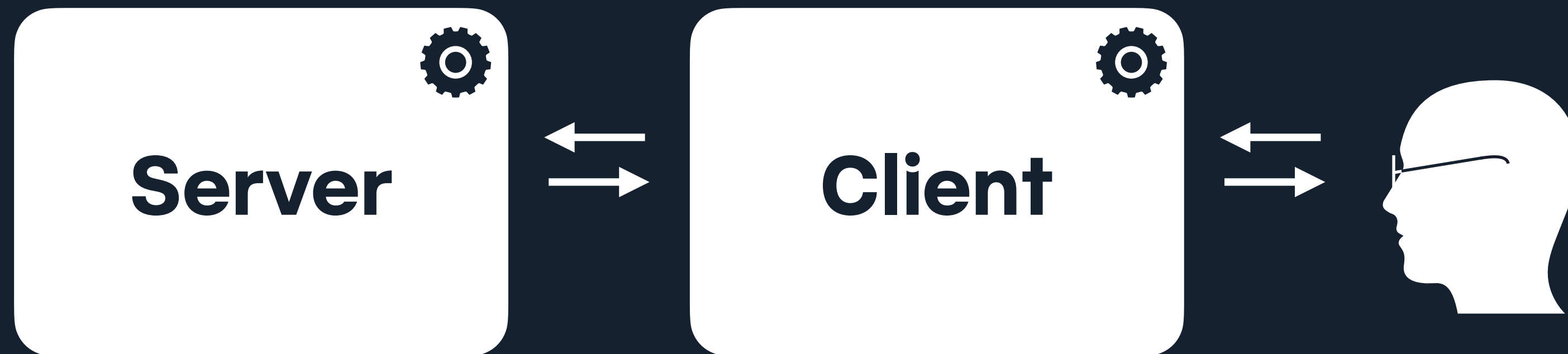
Getting to the glass



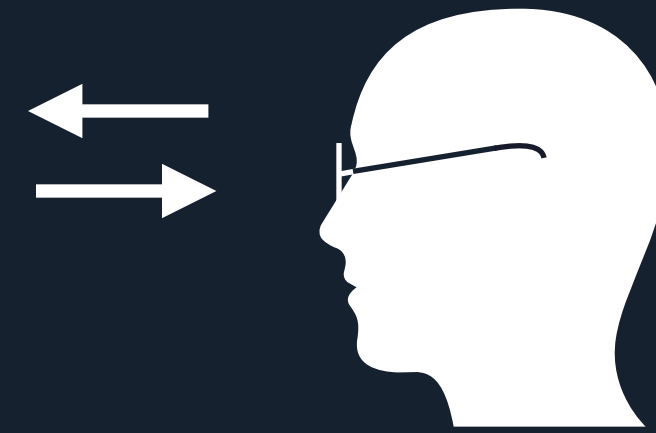


Getting to the glass

“Time to glass”



**All the magic
that does the things
that gets the stuff
to the place**



All the magic that does
the things that gets the
~~Getting~~ `get` the `people` glass

approaches to rendering views on the web

Phil Hawksworth, Netlify

oh, hello

Phil Hawksworth

According to my family, **I work in computers**

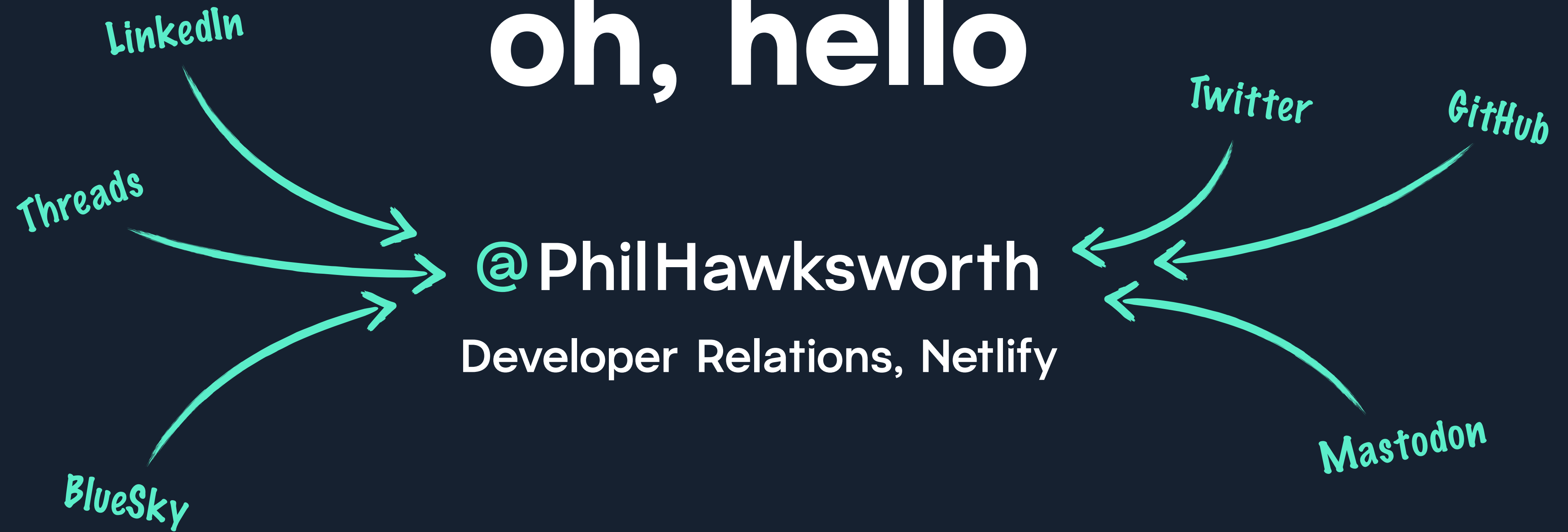
A man in a grey and silver robot suit is shown from the chest up. He has a surprised expression, looking upwards and to the right. His right hand is pointing up and to the right, while his left hand is pointing up and to the left. The robot suit has a rectangular chest panel with two circular speakers, two red buttons, and a black rectangular panel. The background is a solid grey color.

oh, hello

Phil Hawksworth

According to my family, I work in computers

oh, hello





How do we do the best job of
getting to the glass?

It depends*

* more on that later

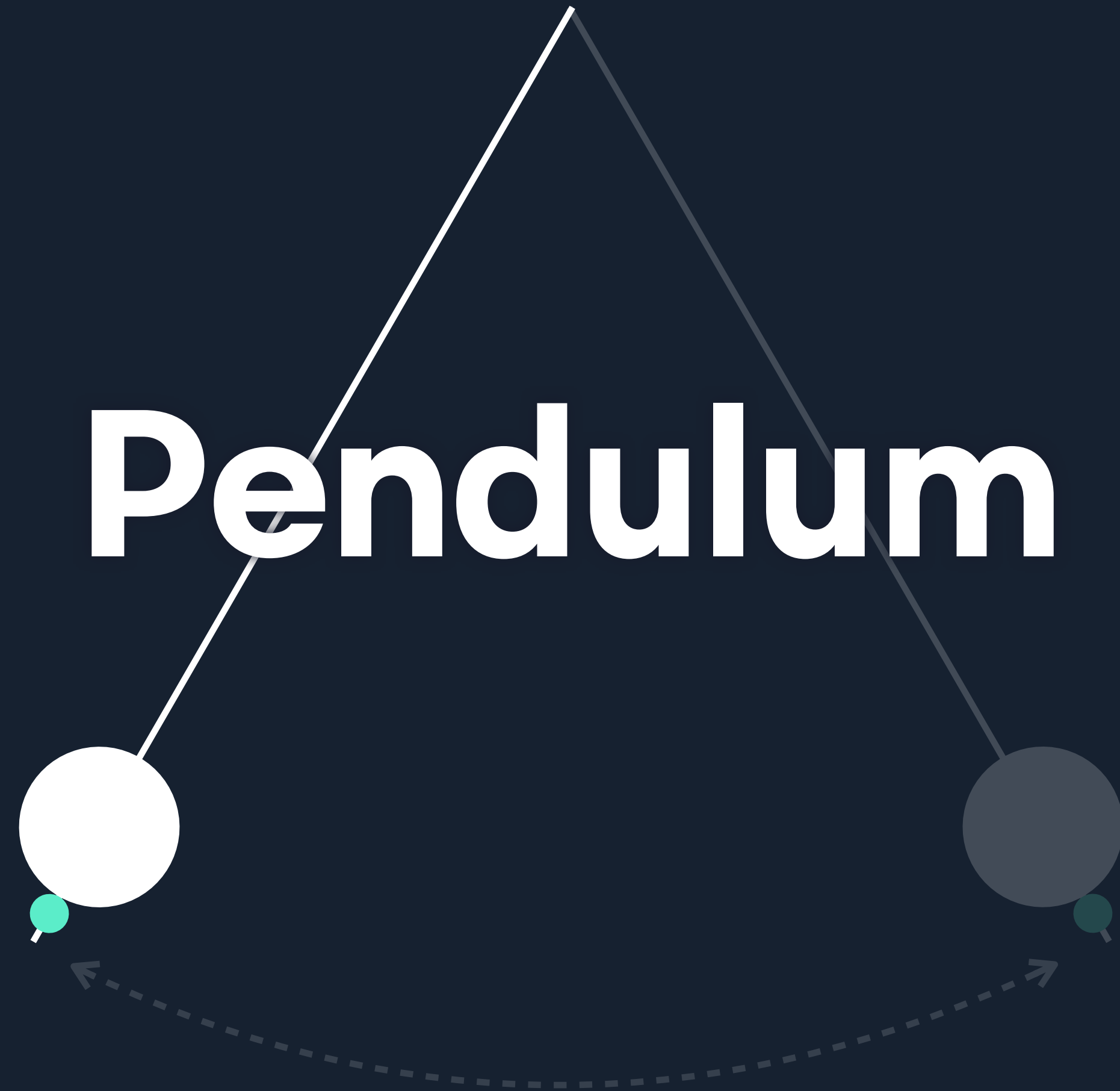


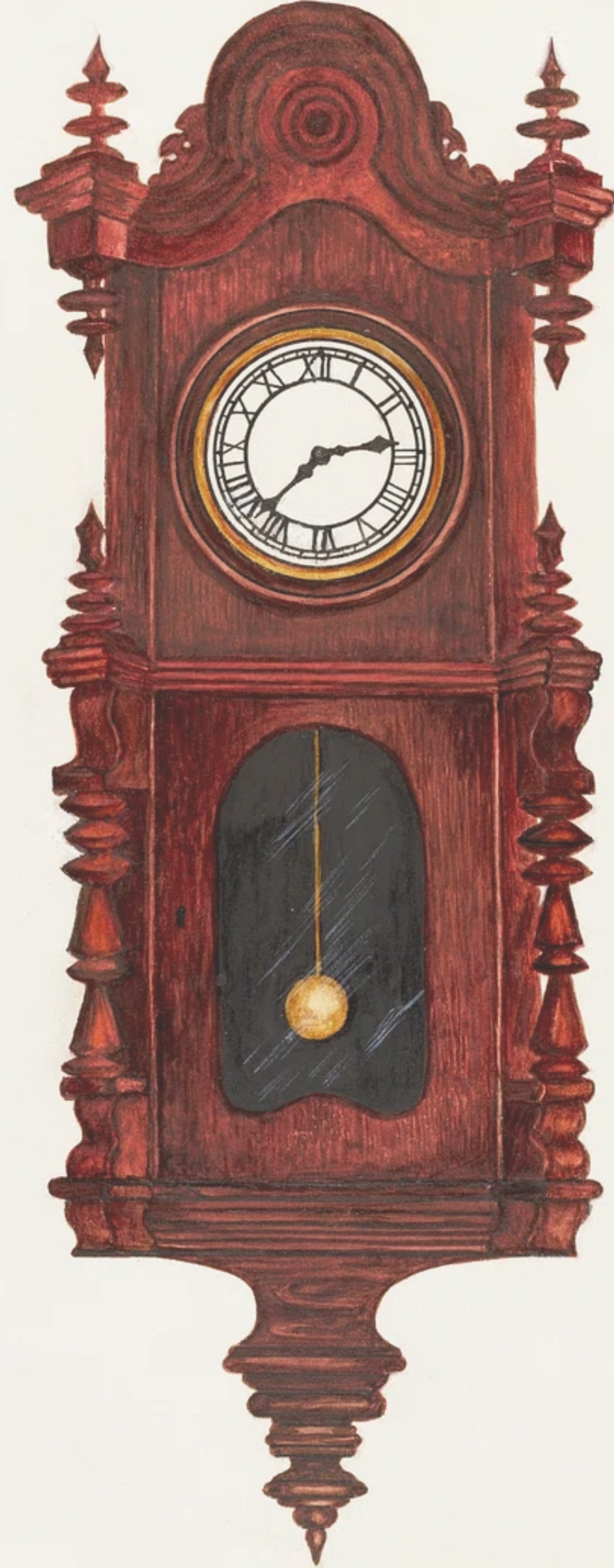
**Trends in
web development
are cyclical**

Pendulum



Pendulum





Pendulum

Pendulum

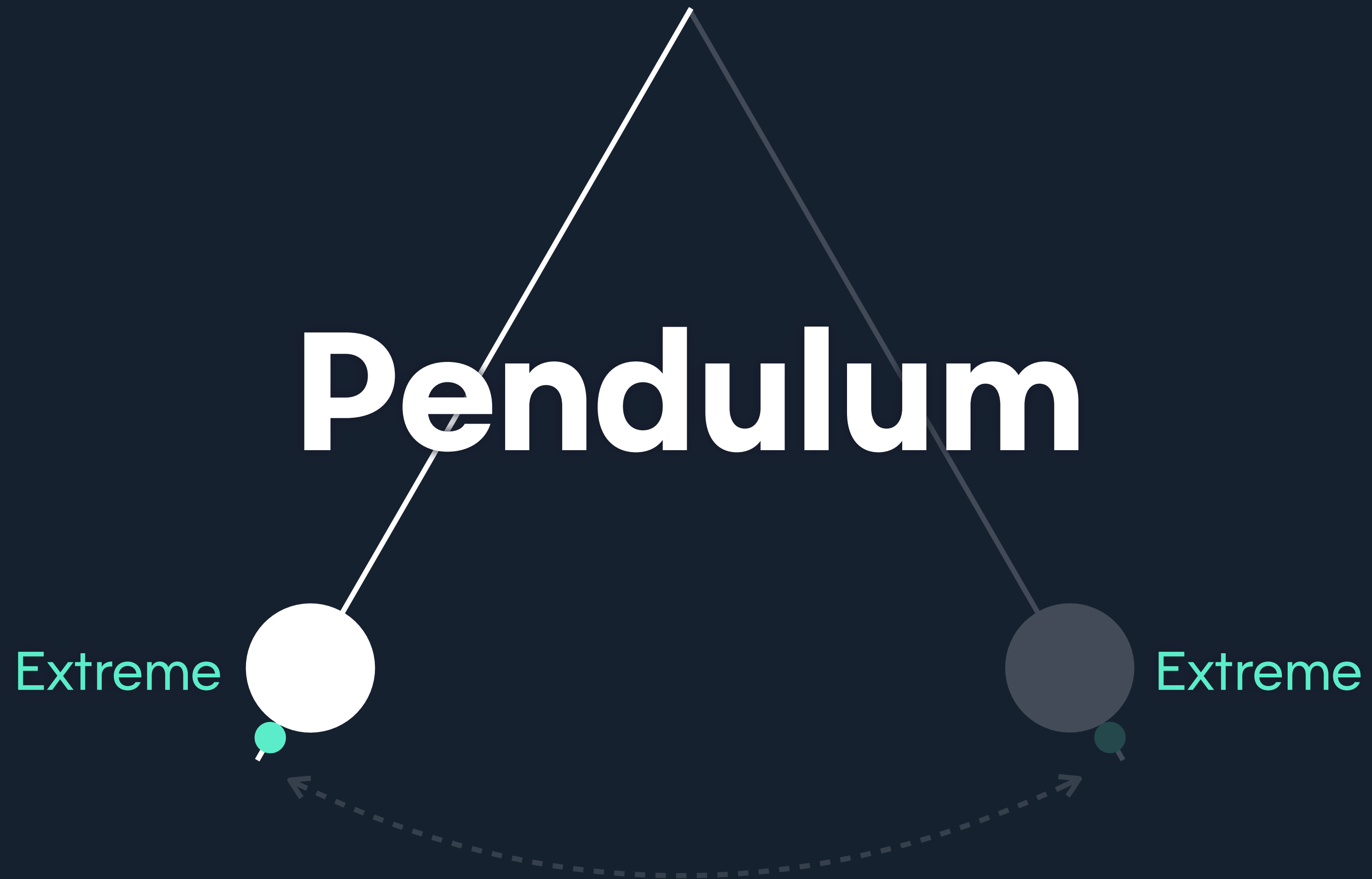


Pendulum

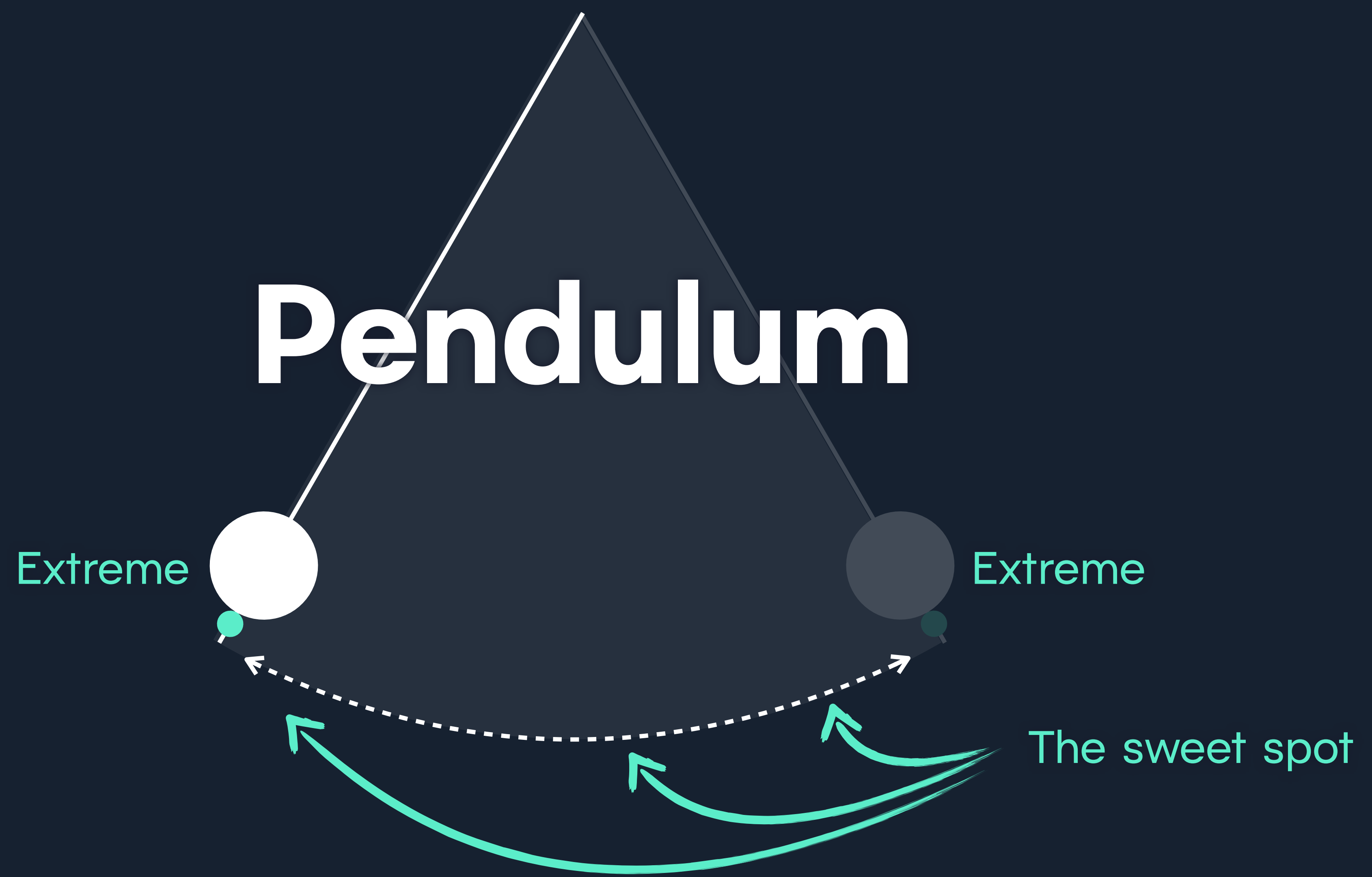
ON
SPECIAL
Normally \$599-
Now
\$499-



Pendulum



Pendulum



It depends

ESR / ISR / ODB / SPA / MPA / ESR

MPA / MPA / SSR / CSR / SSG /

SPA / MPA / SSR / CSR / SSG

SSR / CSR / SSG / DPR / DSG

SSR / CSR / SSG / DPR / DSG /

ESR / ISR / ODB / SPA / MPA /

It depends

Requirements / Costs / Time / Skills / Sustainability...

But...

Simplicity

is always something to strive for

The principle of
least power

Computer Science [...] spent a lot of effort making languages which were as powerful as possible.

Nowadays we have to appreciate the reasons for picking not the most powerful solution but the least powerful

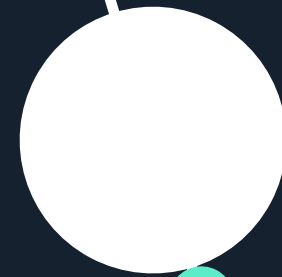
— Tim Berners-Lee

Simplify as much as possible

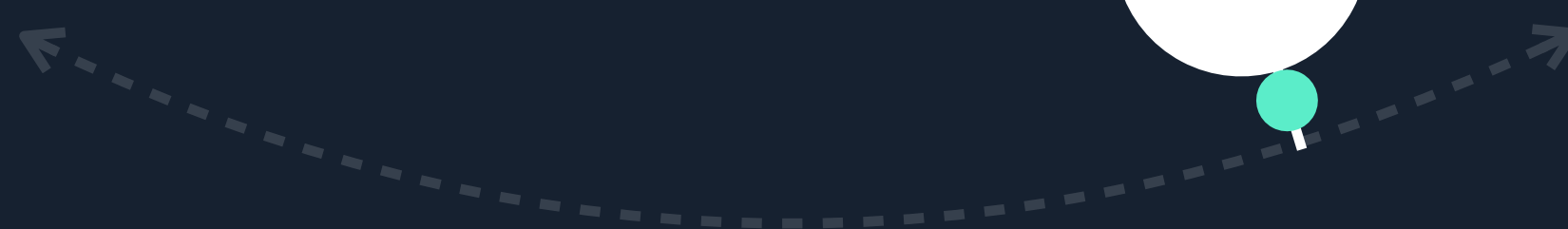
But no more

Pendulum

Complexity



Simplicity



Pragmatic



How do we do the best job of
getting to the glass?

ESR / ISR / ODB / SPA / MPA / ESR

MPA / MPA / SSR / CSR / SSG /

SPA / MPA / SSR / CSR / SSG

SSR / CSR / SSG / DPR / DSG

SSR / CSR / SSG / DPR / DSG

ESR / ISR / ODB / SPA / MPA /

Pendulum

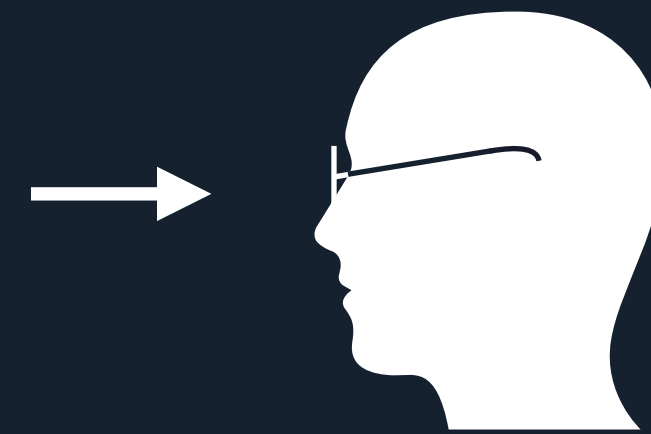
Client render



Server render

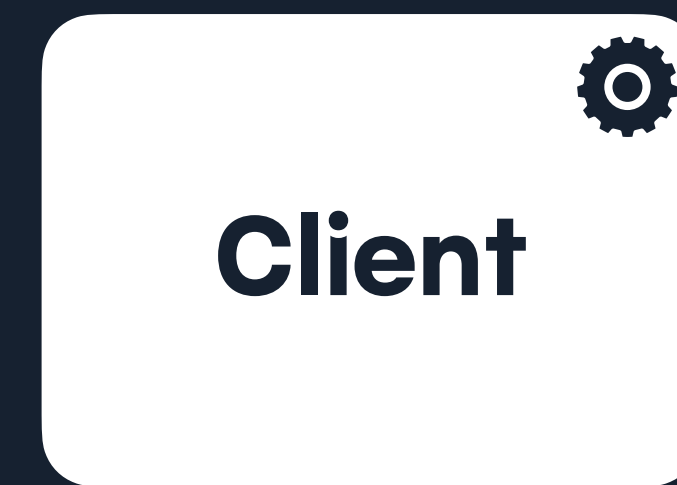
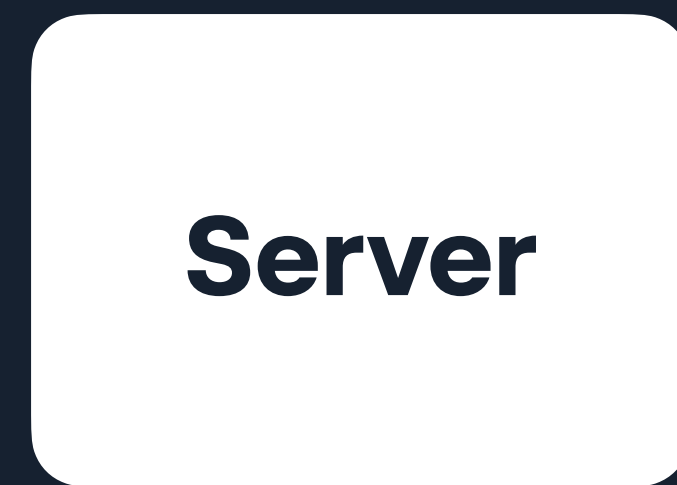
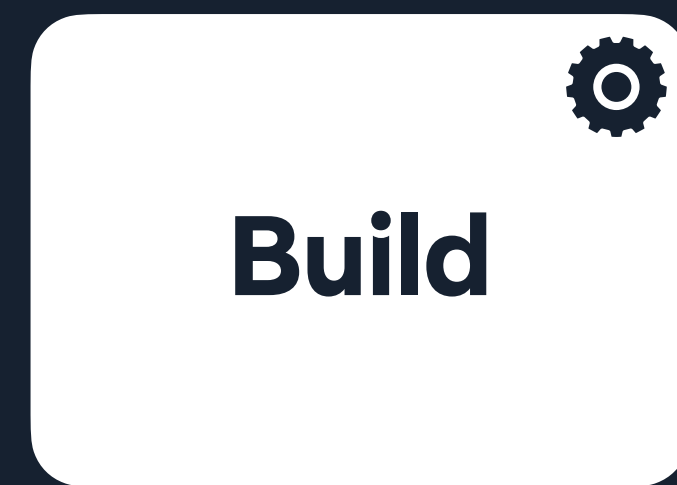


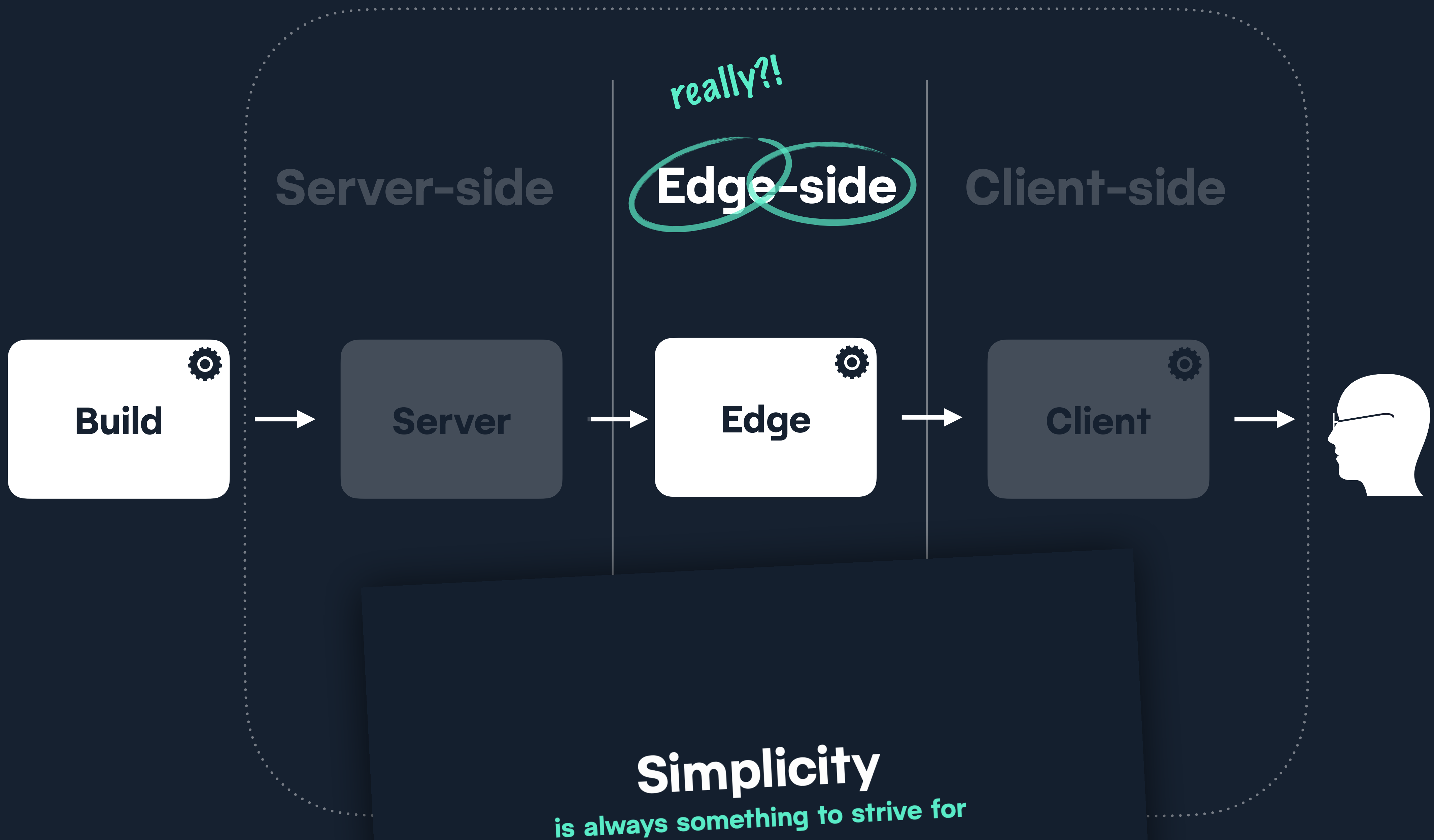
**All the magic
that does the things
that gets the stuff
to the place**



Server-side

Client-side





**Generate
our pages**

BUILD



**Enhance
our pages**

EDGE



**Display
our pages**

CLIENT

POTENTIALLY

BORING



**I'm excited about
this pattern**

— Shameless display of feelings,
Phil Hawksworth,
Just now

**SOME BORING
EXAMPLE**





This website utilizes technologies such as cookies to enable essential site functionality, as well as for analytics, personalization, and targeted advertising purposes. You may change your settings at any time or accept the default settings.

You may close this banner to continue with only essential cookies, but we'd prefer you to accidentally press the big Accept button

[Cookie Policy](#)

Accept

[Review](#)



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You may close this banner to continue with only essential cookies, but we'd prefer you to accidentally press the big Accept button

[Cookie Policy](#)

Accept

[Review](#)



We use cookies because, well, we have to. Click "Accept" if you want to proceed - if not, tough luck. Manage your preferences if you dare by clicking "Cookie Settings".

We gather data through cookies to tailor content, track our traffic, and for some social media stuff. By accepting, you've committed. Read about it in our Privacy Policy if you care. Click the link to enlighten yourself.

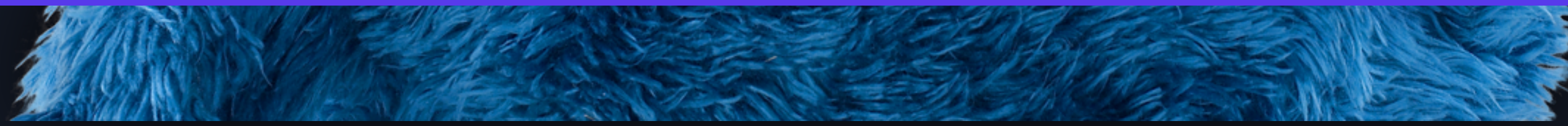
Your privacy matters, but so does our need for cookies. Hit "Accept All" if you have no choice. Choices are limited here. Adjust your settings in our Cookie Settings - or risk the consequences.

Cookies make our site snazzy. Click "Accept All Cookies" or face the consequences. No turning back. Tinker with your cookie settings, if you dare, and uncover our cookie schemes in the Cookie Policy link.am. We are here to assist you and ensure that your browsing experience is both enjoyable and secure.



Accept

[Review](#)



**Display
conditional
Interface**

SO

**Third-party
client-side
JavaScript**

BUT

**Performance
killers**

**Control
cookies**

**Terrible
interface**

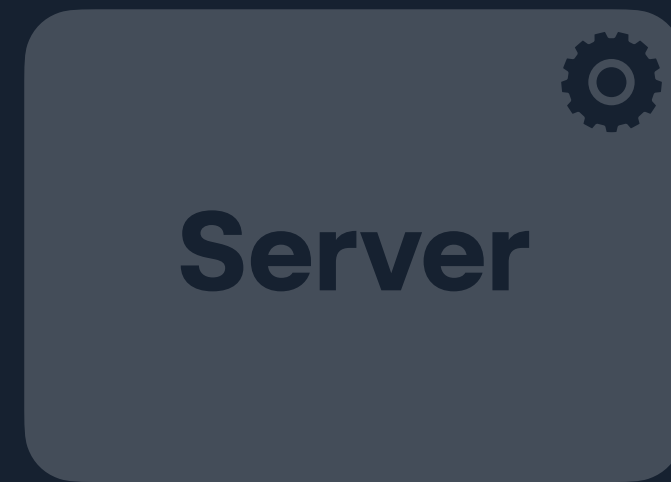




Server-side

Edge-side

Client-side



Search

New

Alex Anderson

Giovanni Benussi

Paul Bratslavsky

Pedro Cattori

Christopher Chedeau

Kent C. Dodds

Clifford Fajardo

Ryan Florence

Arisa Fukuzaki

Edmund Hung

Michael Jackson

Jon Jensen

Cat Johnson

 Remix Contacts

Remix

This is a demo for Remix.
Check out [the docs at remix.run](https://remix.run).



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Search

New

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```
Elements Recorder Console Sources Network Performance Memory Application Security Lighthouse >> ⚙️ ⋮ ✕  
<link rel="modulepreload" href="/build/root-QQU6HMQA.js">  
<link rel="modulepreload" href="/build/routes/_index-QEW43Z5S.js">  
▶ <script>...</script>  
▶ <script type="module" async>...</script>  
  <!-- Cookie consent banner injected by Edge Functions due to the requester's location -->  
  ▶ <style>...</style>  
... ▶ <div class="nf-cookie-notification">...</div> flex == $0  
  <!-- end of injected cookie consent banner -->  
</body>  
</html>  
html body div.nf-cookie-notification
```

```
Styles Computed Layout >>  
Filter :hov .cls + 🗑 📏  
element.style {  
}  
.nf-cookie-notification { (index):38  
  font-family: sans-serif;  
  font-size: 14px;  
  position: fixed;  
  bottom: 2em;  
  right: 2em;
```


Kent C. Dodds

Clifford Fajardo

 Remix Contacts



Thi



Elements

Recorder

Console

Sources

Network

Performance

Memory

Applic

```
<link rel="modulepreload" href="/build/root-QQU6HMQA.js">
```

```
<link rel="modulepreload" href="/build/routes/_index-QEW43Z5S.js">
```

```
▶ <script> ... </script>
```

```
▶ <script type="module" async> ... </script>
```

```
<!-- Cookie consent banner injected by Edge Functions due to the requester's location -->
```

```
▶ <style> ... </style>
```

```
... ▶ <div class="nf-cookie-notification"> ... </div> flex == $0
```

```
<!-- end of injected cookie consent banner -->
```

```
</body>
```

```
</html>
```

html body

div.nf-cookie-notification

No JavaScript

No client-side JavaScript

HTML arrives complete

Location aware

Without needing permission

Sandboxed from other site code
Yet under control of site owners

An edge function example

netlify/edge-functions/hello.ts

```
export default () => new Response("Hello world");

export const config = {
  path: "/hello"
};
```


An edge function example

netlify/edge-functions/cookie-consent.ts

```
import { Context } from "@netlify/edge-functions";
import myCookieBannerTemplate from './utils/banner.js';
import cookiePolicyCountries from './utils/territories.js';

export default async (request: Request, context: Context) => {

  const countryCode = context.geo?.country?.code;
```


An edge function example

```
netlify/edge-functions/cookie-consent.ts
```

```
export default async (request: Request, context: Context) => {  
  
  const countryCode = context.geo?.country?.code;  
  
  // Show the cookie banner to visitors from the correct countries  
  if(cookiePolicyCountries.includes(countryCode)) {  
  
    // Get the HTTP response content  
    const response = await context.next();  
    const page = await response.text();  
  }  
}
```


An edge function example

```
netlify/edge-functions/cookie-consent.ts
```

```
// Show the cookie banner to visitors from the correct countries  
if(cookiePolicyCountries.includes(countryCode)) {
```

```
    // Get the HTTP response content
```

```
    const response = await context.next();
```

```
    const page = await response.text();
```

```
    // Insert the UI just before the end of the body tag
```

```
    const ui = myCookieBannerTemplate(countryCode);
```

```
    const regex = /<\s*\/body>/i;
```

```
    const updatedPage = page.replace(regex, ui);
```


An edge function example

```
netlify/edge-functions/cookie-consent.ts

const page = await response.text();

// Insert the UI just before the end of the body tag
const ui = myCookieBannerTemplate(countryCode);
const regex = /<\s/body>/i;
const updatedPage = page.replace(regex, ui);
return new Response(updatedPage, response);
}
}
```


Search

New

Alex Anderson

Giovanni Benussi


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Kent C. Dodds

Clifford Fajardo

 Remix Contacts



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.nf-cookie-notification { (index):38  
  font-family: sans-serif;  
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  position: fixed;  
  bottom: 2em;  
  right: 2em;
```


**Generate
our pages**

BUILD



**Enhance
our pages**

EDGE



**Display
our pages**

CLIENT

POTENTIALLY

Framework free

Framework agnostic

**Generate
our pages**

BUILD



**Enhance
our pages**

EDGE

POTENTIALLY



**Display
our pages**

CLIENT

Localised times

Pre-conf day
Sunday, 8th

Conference
Monday, 9th ↓

Conference
Tuesday, 10th

7:00 – 7:40

Morning Run 🏃

Join speakers and attendees for a 5k run! On Monday, join the [conference venue](#) at 7:00 and run about 5k, returning to the venue running for approximately 30–40 minutes.

Everyone is welcome, it'll be a gentle jog to start with. The run will finish with a yoga session, so you'll be able to join in for the finish will be the yoga, so you'll be able to join in.

7:40 – 8:30

Morning Yoga in the Park 🧘

Have some mindful movement at the start of your day. This yoga practice will be a perfect start to a busy day of work.

The beginner-friendly, 45-minute yoga class will be led by Ari (and part-time yoga teacher), Ari. We'll meet at the venue.

Bring a towel or mat to practice on, and please don't forget your water!

8:30

Doors Open

Localized times

Pre-conf day
Sunday, 8th

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Bring a towel or mat to practice on, and [please](#)

8:30

Doors Open

FAQ



RAYCAST MERCH

VISIT RAYCAST

CART



Mug Black

£15

ADD TO CART

NOTES:

This mug is an understatement with it's black on black print.

While it won't make your hot beverages more delicious, it will make your colleagues jealous. It's dishwasher safe.



might like



Pricing data and stock levels

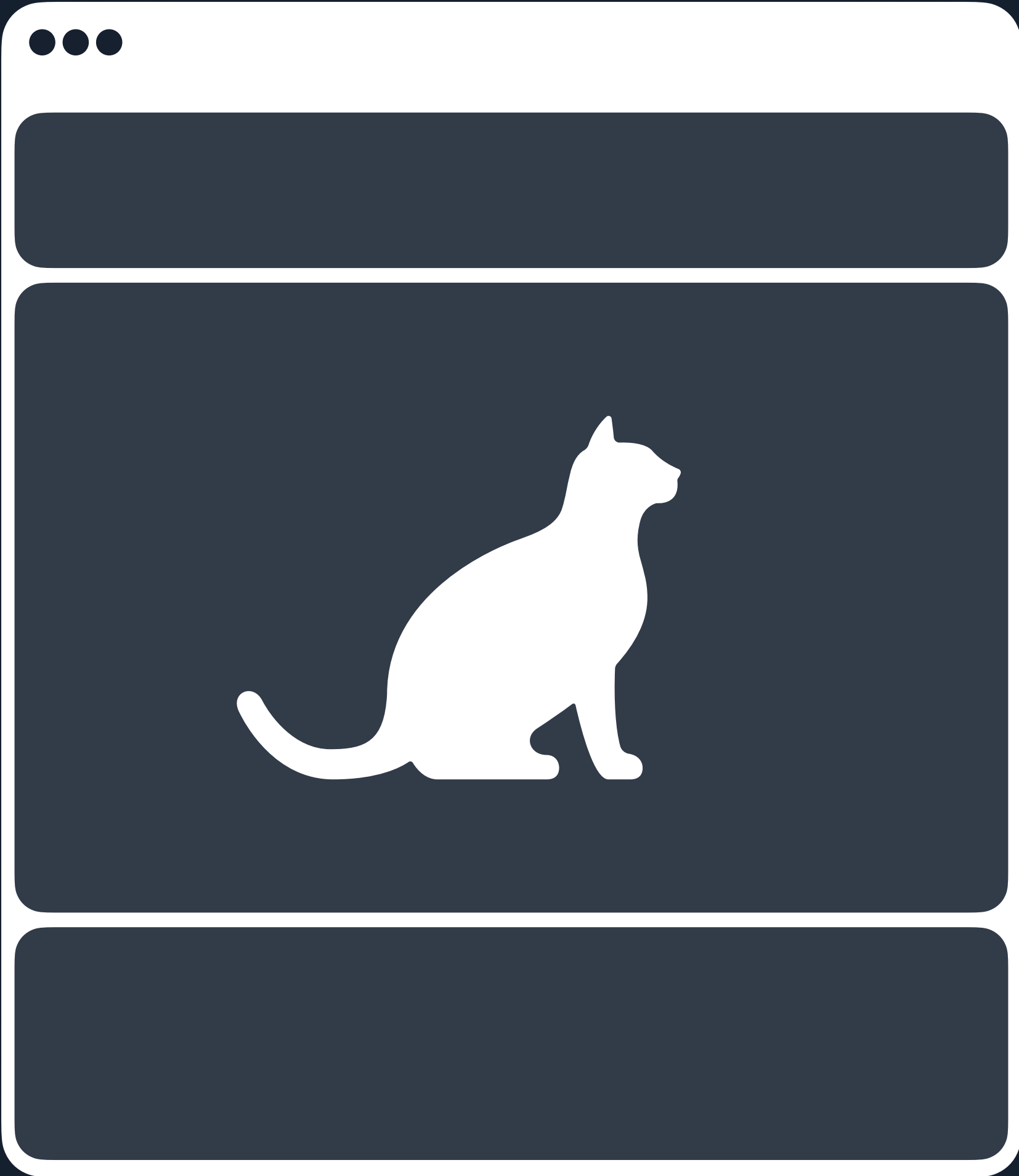
How well does it work?

How well does it  ?



Will they notice?

**ANOTHER
BORING
EXAMPLE**

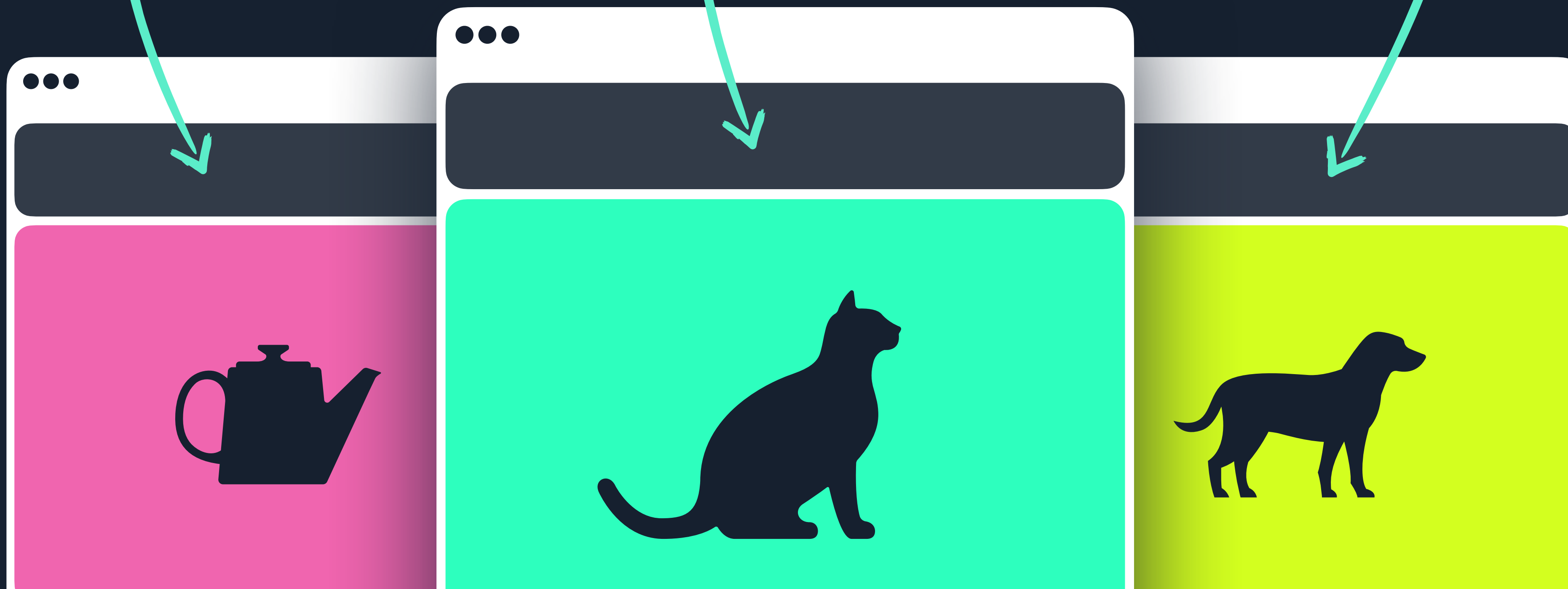








Global navigation



MEGA NAV





Your Account



Your Orders

Track, return, cancel an order, download invoice or buy again



Your Addresses

Edit, remove or set default address



Gift Cards & Top Up

View balance or redeem a card and purchase a new Gift Card

Buy it again

View All & Manage



Catsan Natural Clumping Cat Litter, 100 Percent...

£26.89 (£26.89/count)

✓prime

Add to Basket



PRO PLAN VETERINARY DIETS NF Advanced Car...

£36.26 (£10.66/kg)

Add to Basket



ROYAL CANIN Renal Select Cat Food, 2 kg

£30.88 (£15.44/kg)

Add to Basket



Hario Paper Filters for V60 Dripper Coffee Ma...

£8.35 (£0.08/count)

✓prime

Add to Basket



Felix Doubly Delicious Meat Cat Food 120x100g

£41.99 (£3.50/kg)

✓prime

Add to Basket



A4 Self-Adhesive Rubber

Who's shopping? Select a profile.

Manage Profile

Your Lists

Alexa Shopping List
0 items

Ideas reserved for Verity

Wishlist

Someday

Wish List

Save & Compare

Find a Gift

Create a List

Wedding List

Baby Wishlist

Discover Your Style

Explore Showroom

Your Account

Switch Accounts

Sign Out

Your Account

Your Orders

Your Lists

Keep Shopping For

Your Recommendations

Recalls and Product Safety Alerts

Your seller account

Your Subscribe & Save Items

Your Pets

Memberships & Subscriptions

Your Prime Membership

Manage Your Content and Devices

Your Kindle Unlimited

Your Music Subscriptions

Your Music

Your Amazon Photos

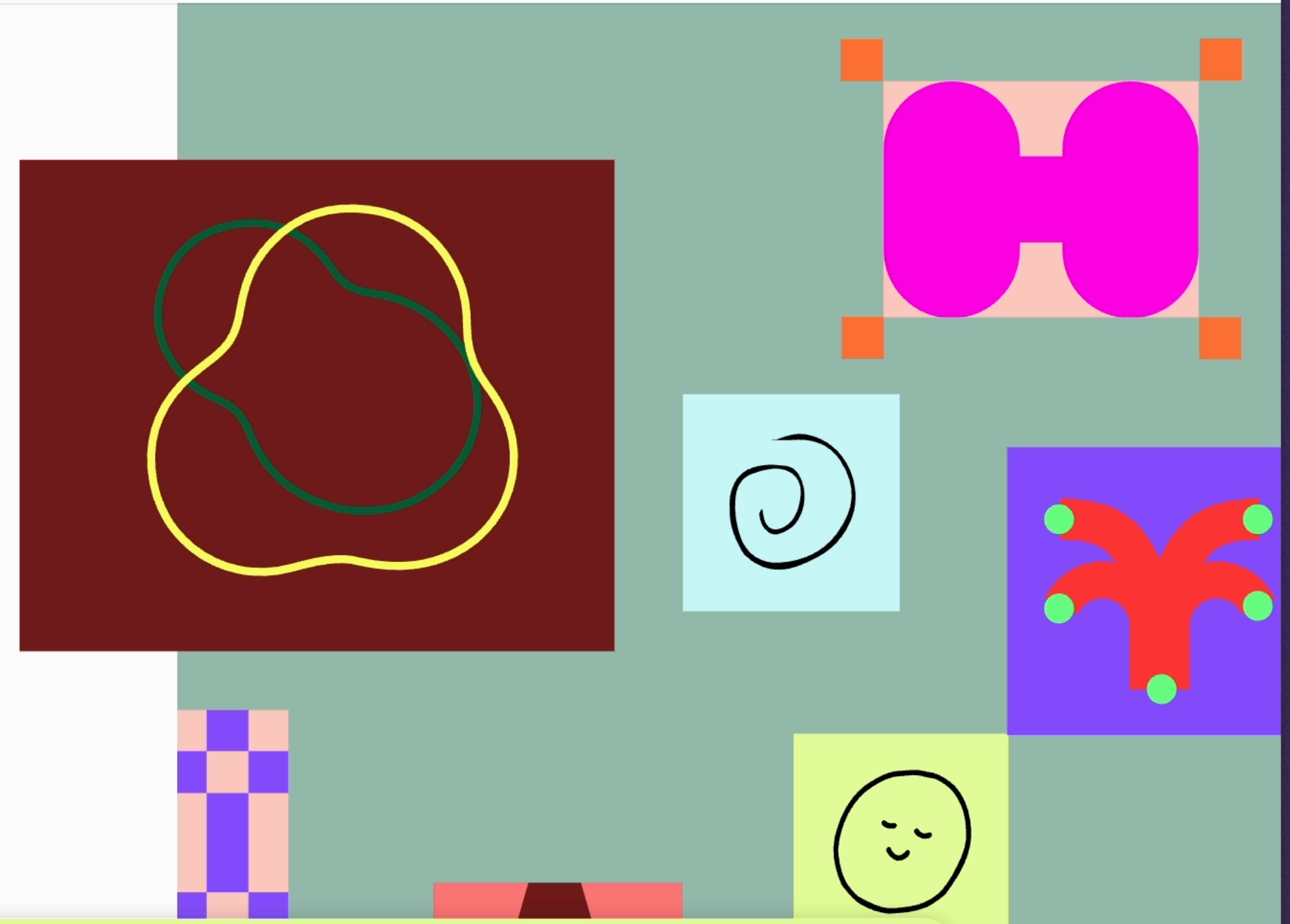
Your Prime Video



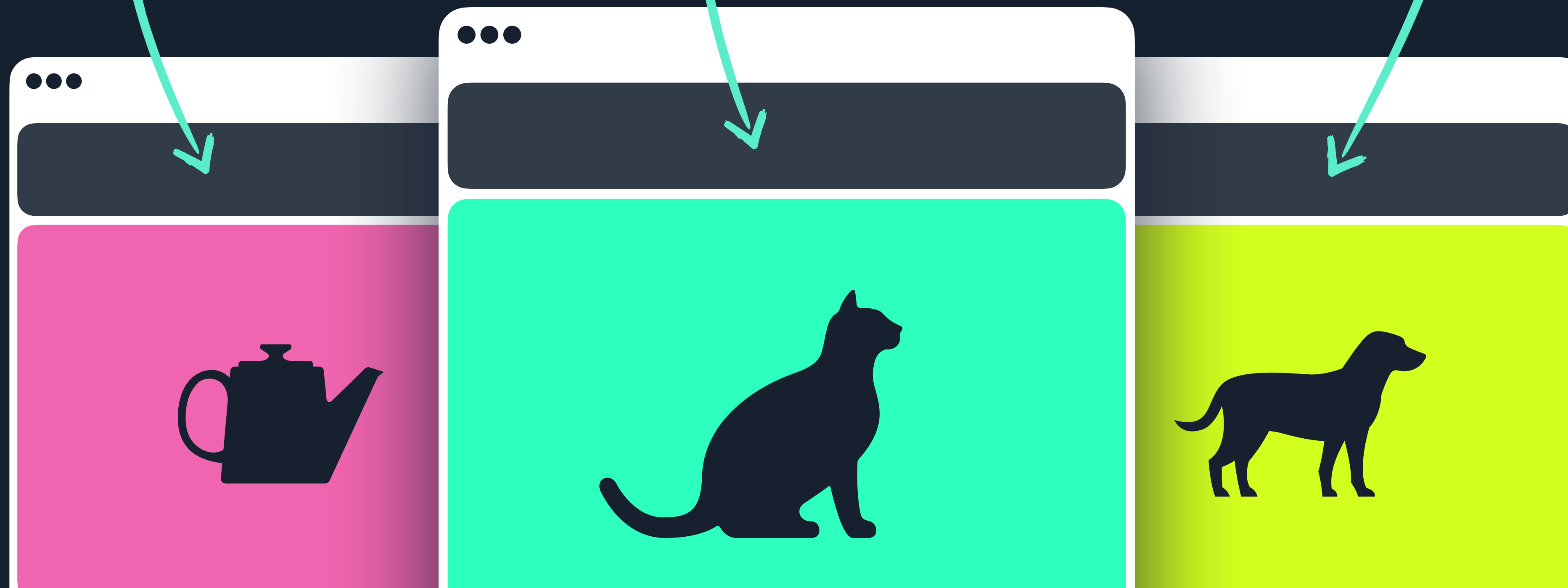
Think bigger. Build faster.

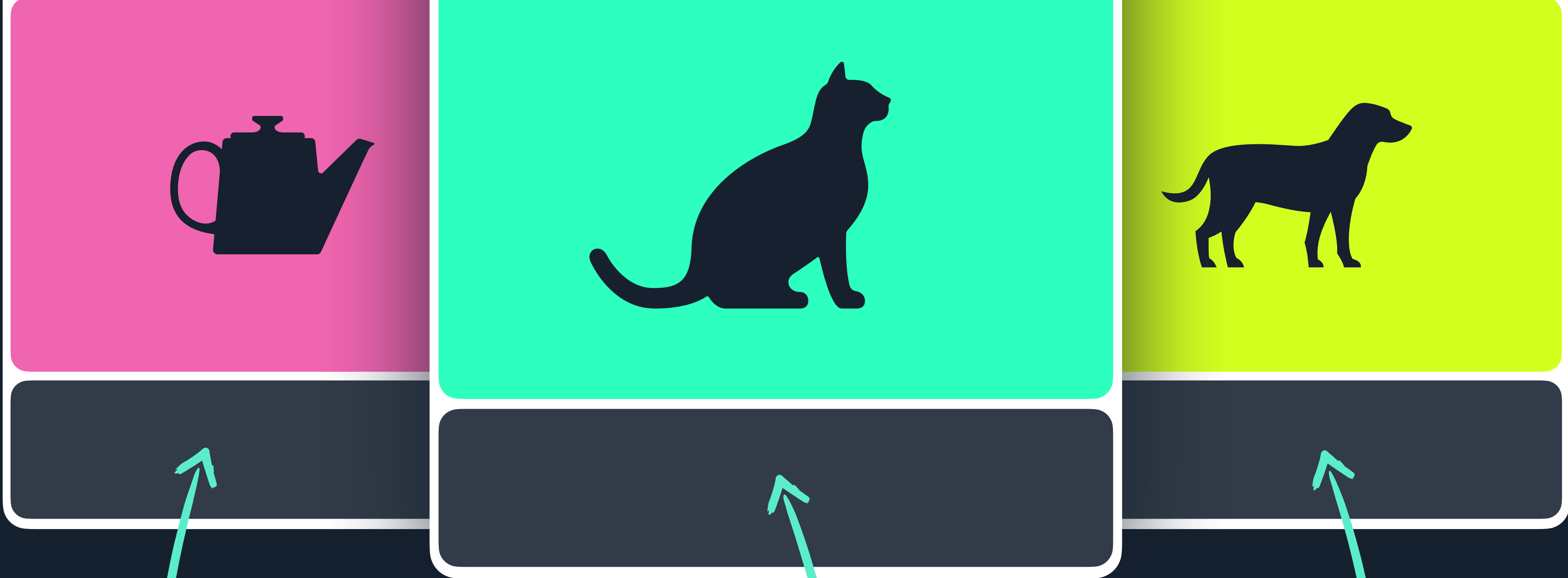
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Many sites

Many stacks

Many brand teams

Many headaches when trying to keep them all consistent, and the various legal and compliance teams happy

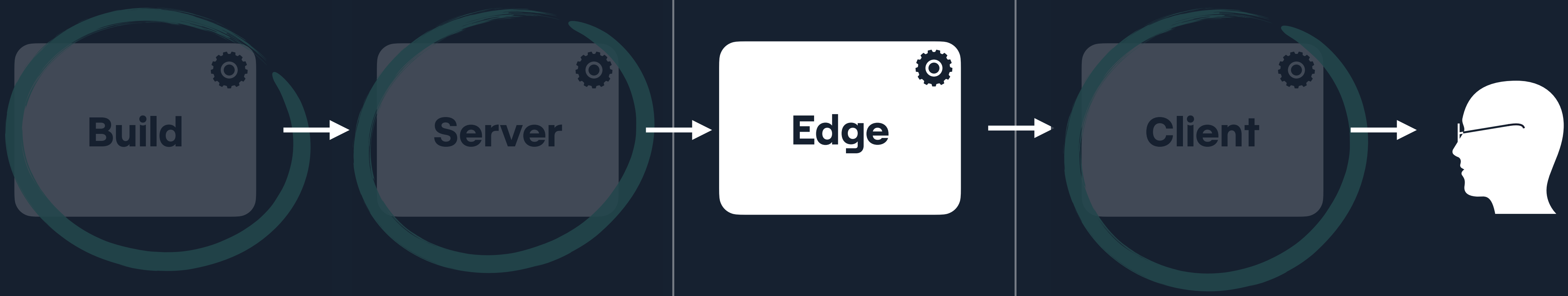
SSI

FFS. Not another TLA

Server-side

Edge-side

Client-side



An edge include utility

any-old-page.html

```
<edge-include href="https://example.com/global-footer.html" />
```


An edge include utility

any-old-page.html

```
<edge-include href="https://example.com/global-footer.html">  
  
  <footer>  
    <ul>  
      <li><a href="/">Home</a></li>  
      <li><a href="/legal">Legal</a></li>  
      <li><a href="/styleguide">Styleguide</a></li>  
    </ul>  
  </footer>  
  
</edge-include>
```

An edge include utility

netlify/edge-functions/include.ts

```
export default async (request: Request, context: Context) => {  
  const resp = await context.next();  
  return new HTMLRewriter()  
    .on('edge-include', new UserElementHandler())  
    .transform(resp);  
};
```


An edge include utility

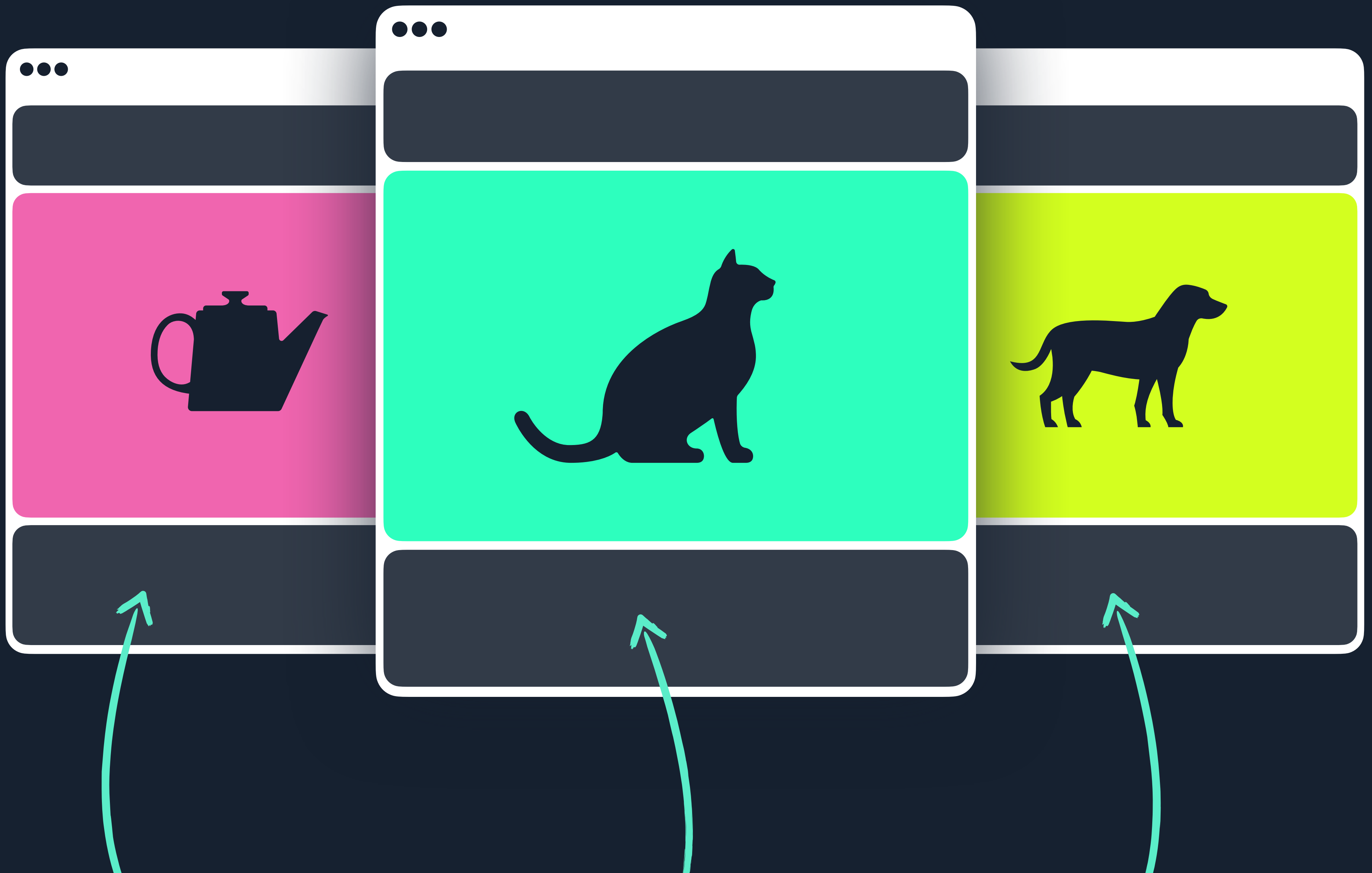
netlify/edge-functions/include.ts

```
class UserElementHandler {
  async element(element) {
    // Go get it
    const url = element.getAttribute('href');
    let response = await fetch(new Request(url));
    if(response.ok) {
      // Replace the custom element with the content
      let html = await response.text();
      element.replace(html, { html: true });
    }
  }
}
```

An edge include utility

netlify/edge-functions/include.ts

```
class UserElementHandler {
  async element(element) {
    // Go get it
    const url = element.getAttribute('href');
    let response = await fetch(new Request(url));
    if(response.ok) {
      // Replace the custom element with the content
      let html = await response.text();
      element.replace(html, { html: true });
    }
  }
}
```

DONE

**Generate
our pages**

BUILD



FAST

**Enhance
our pages**

EDGE



DONE

**Display
our pages**

CLIENT

POTENTIALLY

**But what about
data that's not
close to the edge?**



Netlify Developers

Compose Conference 2024 is coming! [Submit a talk](#)

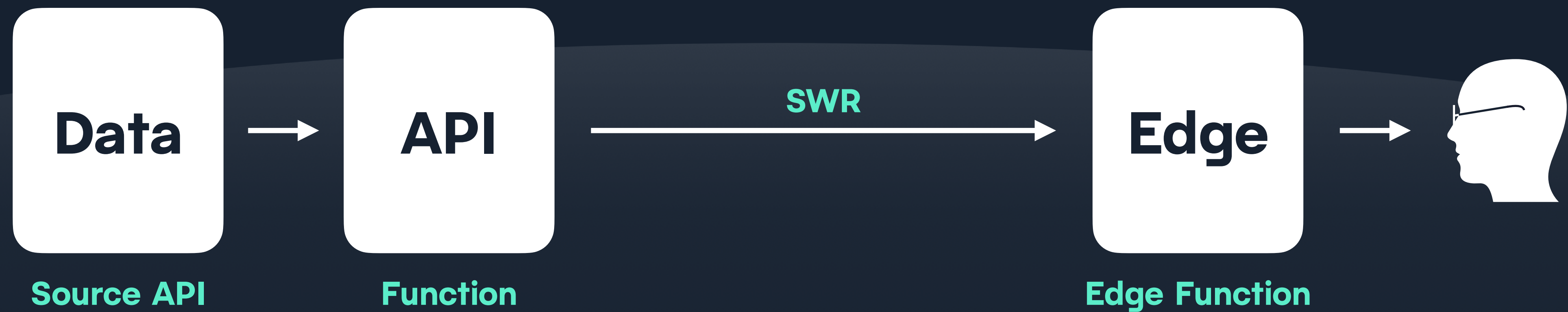
April 30, 2024

How to make edge rendering fast

by Mathias Biilmann

After some initial hype around edge rendering, the mood in the front-end ecosystem has muted down somewhat after the surprising discovery that most datasets that people want to render on top of, sits in a database that runs in a single region and that's not going to magically get distributed all over the world. This post will show an approach to fast edge rendering on top of normal centralized APIs by using smart caching and cache invalidation.

Making edge rendering fast



Making the edge fast

We're going to do this with one simple addition to our stories function: adding a `netlify-cdn-cache-control` header with a `stale-while-revalidate` instruction.

Change the `netlify/functions/stories.ts` file to the following:

```
export default async () => {
  const resp = await fetch("https://hacker-news.firebaseio.com/v0/topstories.json");
  const ids = await resp.json();

  const stories = await Promise.all(
    ids.slice(0, 100).map(async (id) => {
      const story = await fetch(`https://hacker-news.firebaseio.com/v0/item/${id}.json`);
      return story.json();
    })
  );
};
```


`control` header with a `stale-while-revalidate` instruction.

Change the `netlify/functions/stories.ts` file to the following:

```
export default async () => {
  const resp = await fetch("https://hacker-news.firebaseio.com/v0/topstories.json");
  const ids = await resp.json();

  const stories = await Promise.all(
    ids.slice(0, 100).map(async (id) => {
      const story = await fetch(`https://hacker-news.firebaseio.com/v0/item/${id}.json`);
      return story.json();
    })
  );

  return new Response(JSON.stringify(stories), {
    headers: {
      "content-type": "application/json",
+     "netlify-cdn-cache-control": "public, max-age=0, stale-while-revalidate=86400",
    },
  });
};
```

A similar emerging pattern

PPR

Partial Prerendering

**Generate
our pages**

BUILD



**Enhance
our pages**

EDGE

POTENTIALLY



**Display
our pages**

CLIENT

**Generate
our pages**

BUILD / SSR



**Request
and stream
enhancements**

EDGE



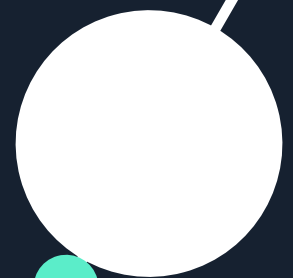
**Update
our pages**

CLIENT

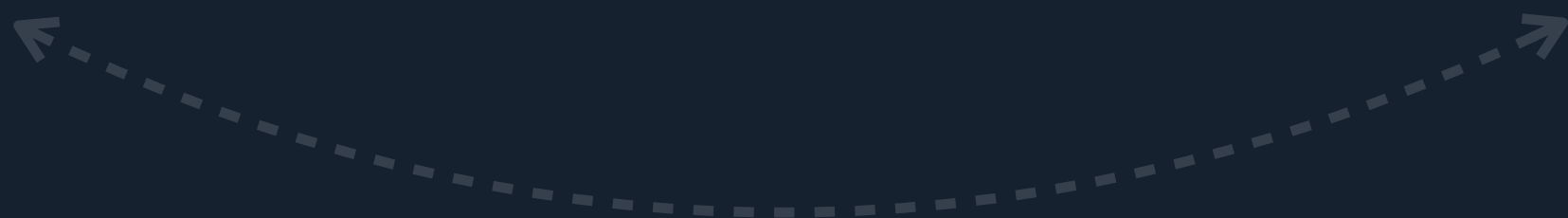
POTENTIALLY

Pendulum

Monolithic



Decoupled





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May 23, 2024

Partial Prerendering without a framework

by Matt Biilmann

Partial Prerendering might sound complex, but with Netlify's Platform Primitives it's simple to implement in plain static HTML without any framework or even build system, with the help of Netlify Edge Functions.

Implementing Partial Prerendering in plain HTML

This example will implement support for Partial Prerendering in a very simple example, with a plain HTML document that has a slot for a dynamically generated time string, and a Netlify Function that returns the current server time. We'll use an Edge Function to tie it all together.

The HTML

We'll start with a simple HTML page with a placeholder for some dynamic content in a `public/index.html`:

```
<!DOCTYPE html>
<html>
  <head>
    <title>PPR</title>
  </head>
  <body>
    <p>Today is: <span data-ppr="/partial/time">Loading...</span></p>
  </body>
</html>
```

Here we use a data tag to indicate that the content of an element should be loaded from a dynamic path

Did we learn anything?

**Rendering patterns
are *yours* to control**

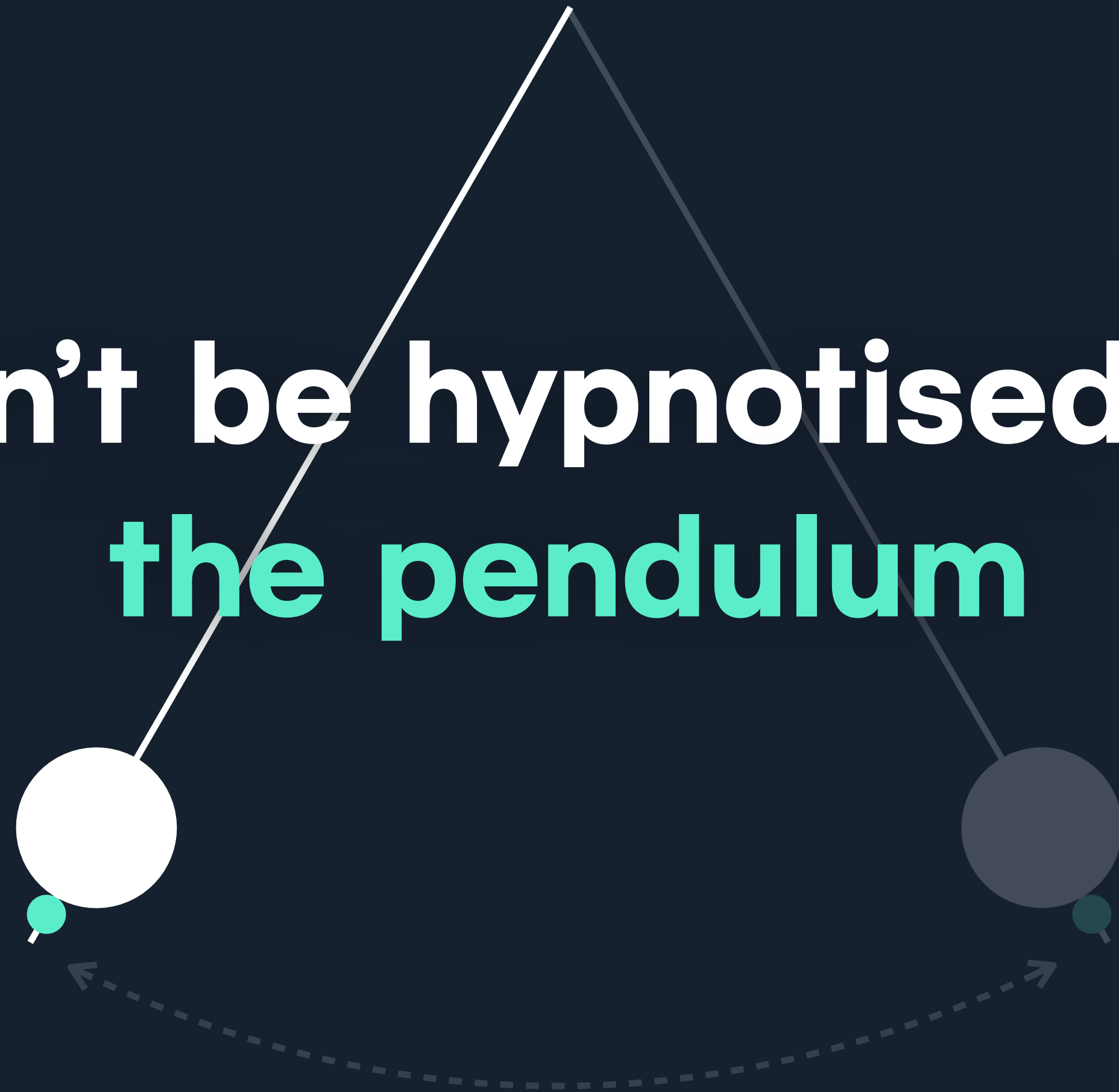
Understand requirements.

Make choices.

Start simple.

**Do as much as possible
in advance**

**Don't be hypnotised by
the pendulum**



It depends

A blue, furry Cookie Monster is shown from the chest up, sitting in the center. He has a wide, black, open-mouthed grin and two large, white eyes with black pupils and thick black eyebrows slanted downwards, giving him an angry or determined expression. The background is a dark, smoky environment filled with bright orange and yellow flames that appear to be rising from the ground around him. The overall lighting is dramatic, with the fire providing the primary light source.

Should I piss off Cookie Monster?



No

Attributions and resources

Links

<https://twitter.com/philhawksworth>

<https://hawksworx.com>

<https://edge-functions-examples.netlify.app/>

<https://developers.netlify.com/guides/how-to-make-edge-rendering-fast/>

<https://developers.netlify.com/guides/partial-prerendering-without-a-framework/>

Images

<https://unsplash.com/photos/clear-drinking-glass-with-orange-liquid-4aWCVJA2uSo>

<https://unsplash.com/photos/a-tall-glass-sitting-on-top-of-a-table-fiN073Jt5L8>

https://unsplash.com/photos/turned-on-flat-screen-monitor-6j_ImeycTrM

https://unsplash.com/photos/brown-and-black-floral-wreath-6BMjuiB_IF0

<https://www.flickr.com/photos/tangledcontrolpads/639854414/in/photostream/>

<https://unsplash.com/photos/bonfire--98jVaVuGv0>

Thanks

[@philhawksworth](#)