



# KEEPING SSR COOL WITH REACT HYDRATION

MONICA POWELL

React Rally 2020



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# HI, I'M MONICA



I'm a software engineer who enjoys building technology that elevates people whether that's increasing access to e-books, creating tools for Meetup's community organizers or sending curated career opportunities to diverse job-seekers at scale. I'm also passionate about making open-source more accessible and recently became an inaugural GitHub Star 



# OVERVIEW

The purpose of this talk is to share some helpful things to keep in mind to render a seamless experience as a Server-Side Rendered (SSR) site transitions from a window-less (server) environment to a browser.

SSR apps tend to have faster initial loading Times and better SEO than client-side only apps.

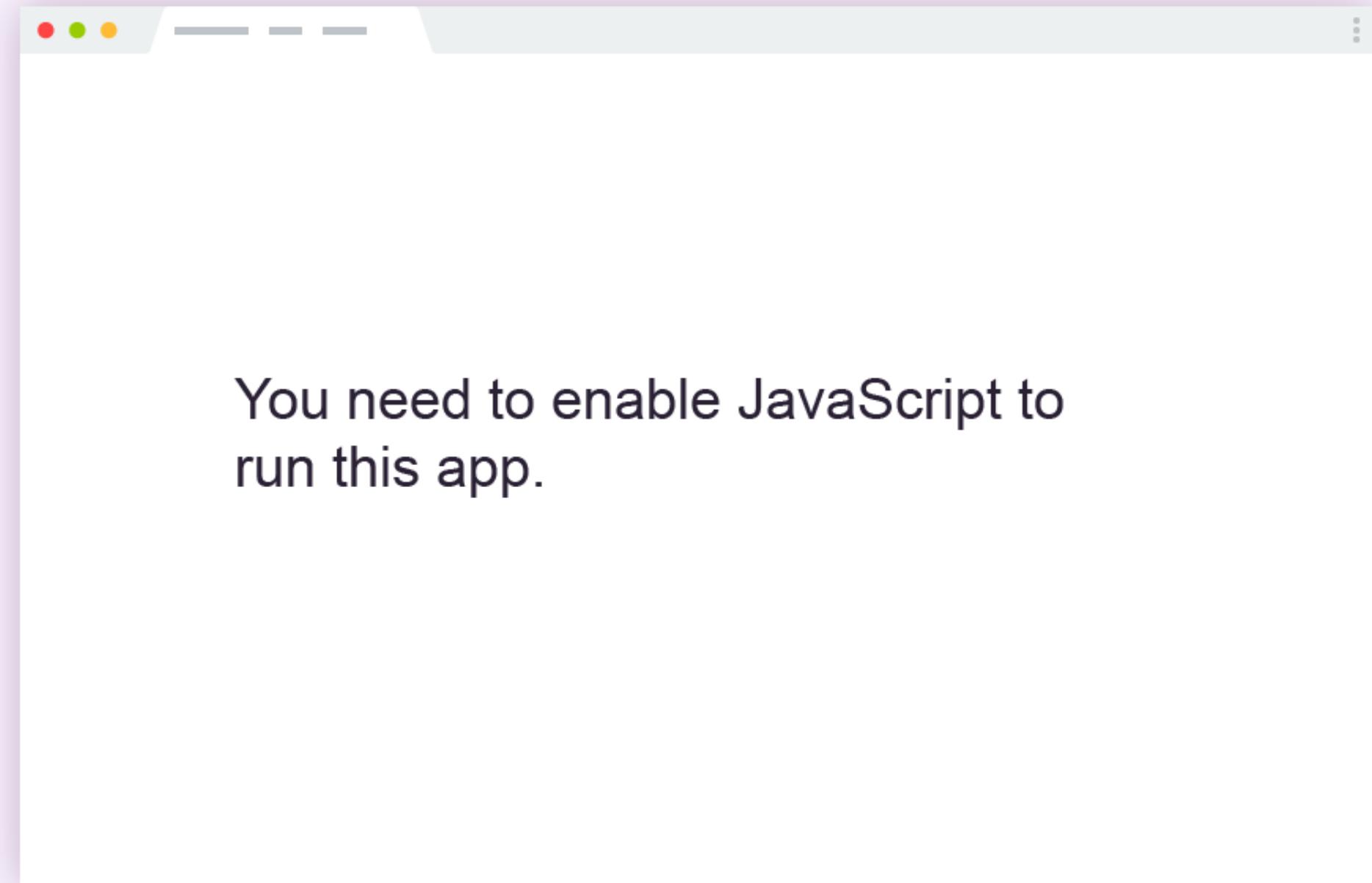


# WHAT IS SERVER-SIDE RENDERING (SSR)?

A server generates the initial HTML that loads in a browser from JavaScript. Frameworks like NextJS and GatsbyJS support SSR out-of-the box



# WHAT IS CLIENT-SIDE RENDERING?

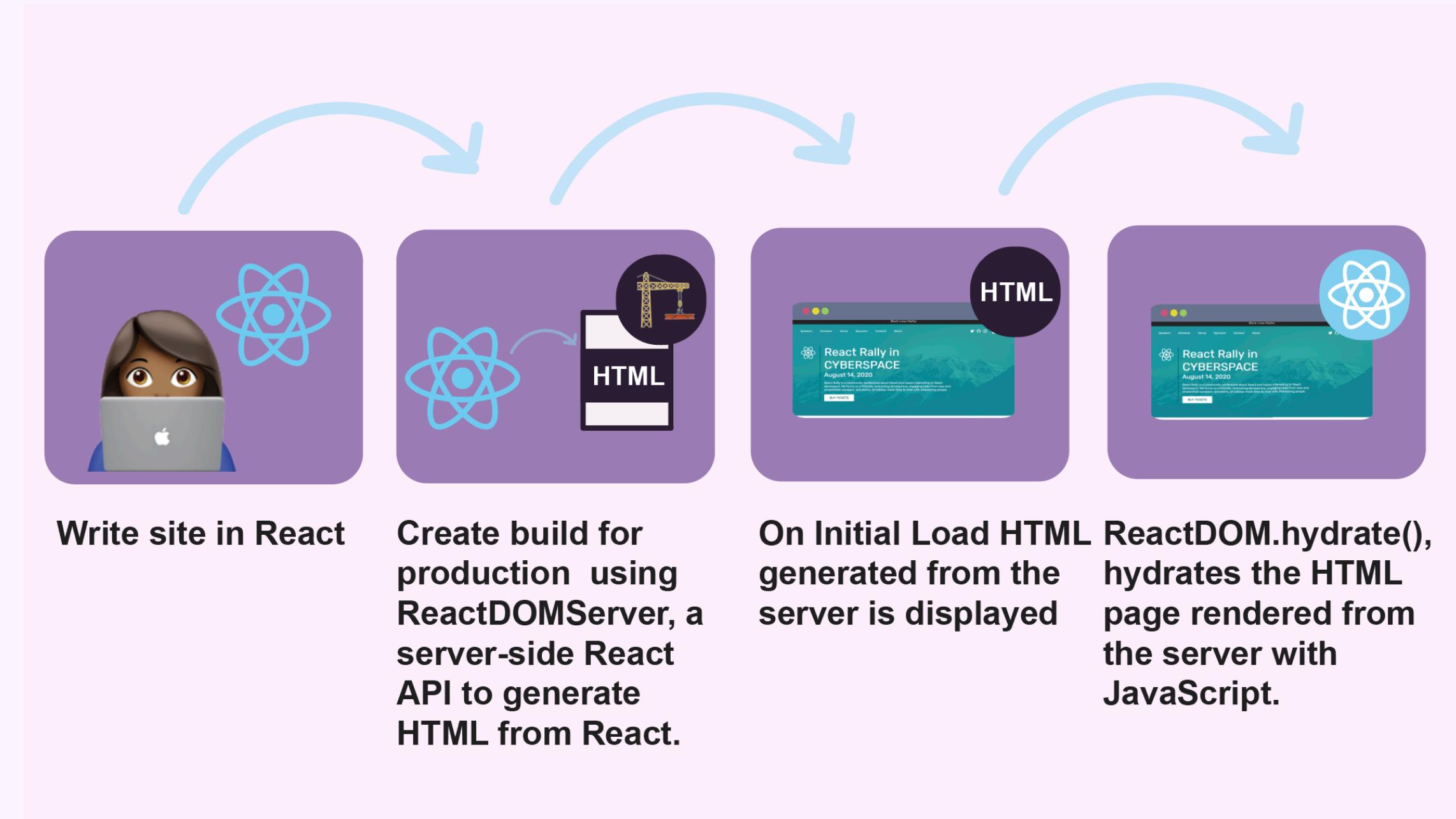


# CLIENT-SIDE INITIAL DOM

```
● ● ●  
  
<html>  
  <head><!-- SEO/Metadata here --></head>  
  <body>  
    <div>You need to enable JavaScript to run this app.</div>  
    <div id="root"></div>  
    <script><!-- all of the JavaScript --></script>  
    <script src="/static/js/2.6158a3d8.chunk.js"></script>  
    <script src="/static/js/main.ba831a9f.chunk.js"></script>  
  </body>  
</html>
```



# OVERVIEW OF SSR (IN STATIC CONTEXT)



# TOGGGLING JAVASCRIPT

NICA POWELL

Software engineer, content creator &  
Community organizer



Hi! I'm Monica! I'm a software engineer who is passionate about making open-source more accessible, spreading technology to elevate people, and building community. You can find me teaching web development on [Egghead](#), contributing to open-source projects like [NYPL-Simplified](#) and [Gatsby.js](#), and co-founding [React Ladies](#), a community I founded for women and non-binary React developers.

Writing

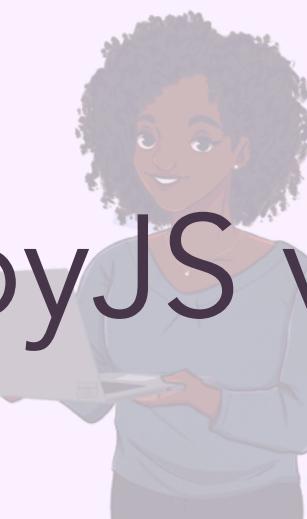
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▶ GatsbyJS vs. Create React App

Grey's Anatomy  
Lorem Ipsum Generator

How many paragraphs should be generated?

4

0

[Generate Lorem Ipsum](#)

Grey's Anatomy Lorem Ipsum Generator

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Software engineer, content creator &  
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# Grey's Anatomy Lorem Ipsum Generator

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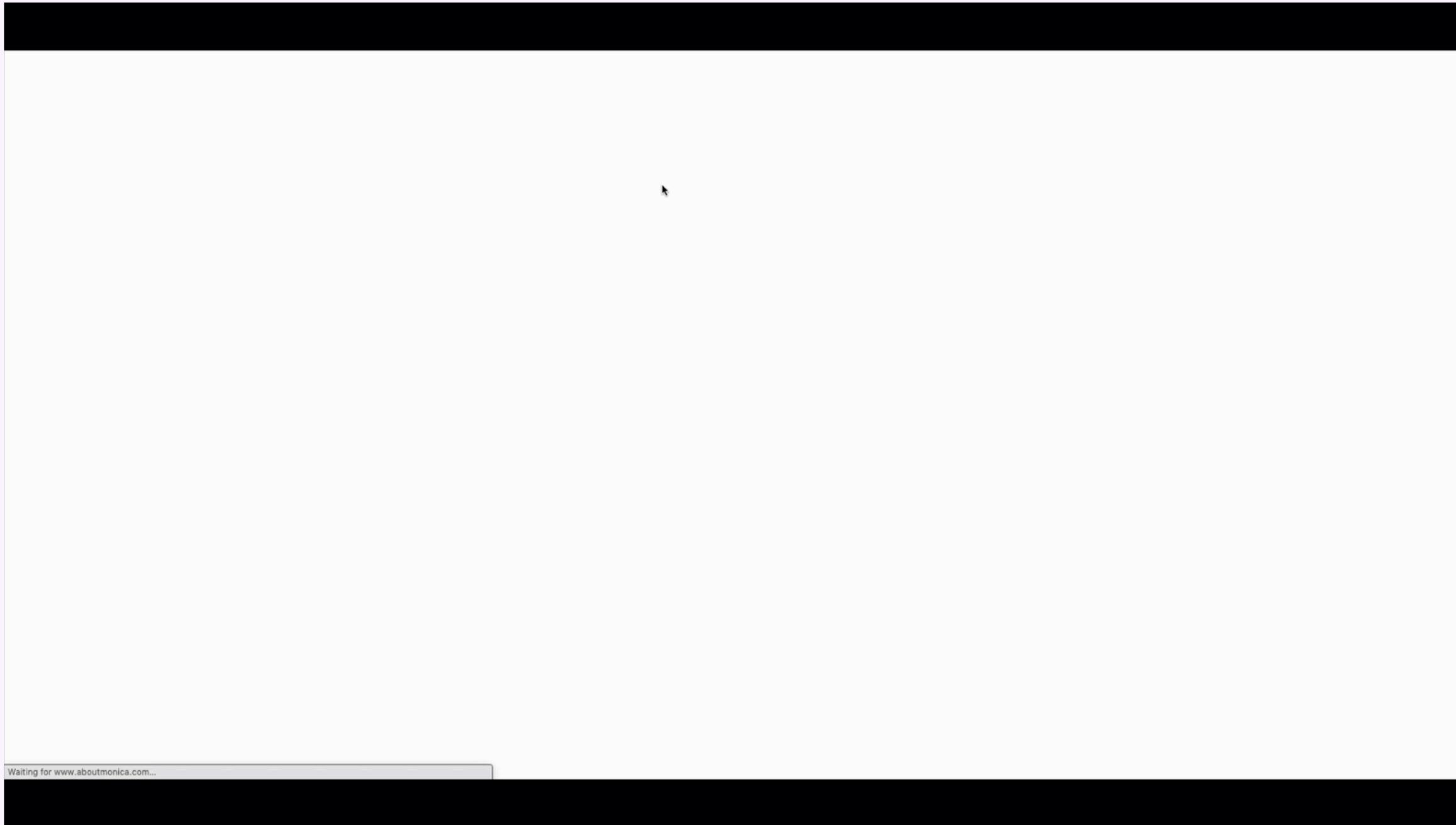
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# IMPORTANT NOTES

- User or browser-specific data is not available in the server when HTML for the site is generated (i.e., window size, authentication status, local storage etc)

The screenshot shows the Target website homepage. At the top, there is a red navigation bar with the Target logo, followed by links for "Categories", "Deals", "What's New", "Same Day Delivery", a search bar, and a user profile for "Monica". Below the red bar, a white footer bar displays the message "My store (closes at 10pm): Las Vegas Flamingo" and links for "Registry", "Weekly Ad", "RedCard", "Gift Cards", "Find Stores", "Orders", and "More".

# WHAT COULD GO WRONG?

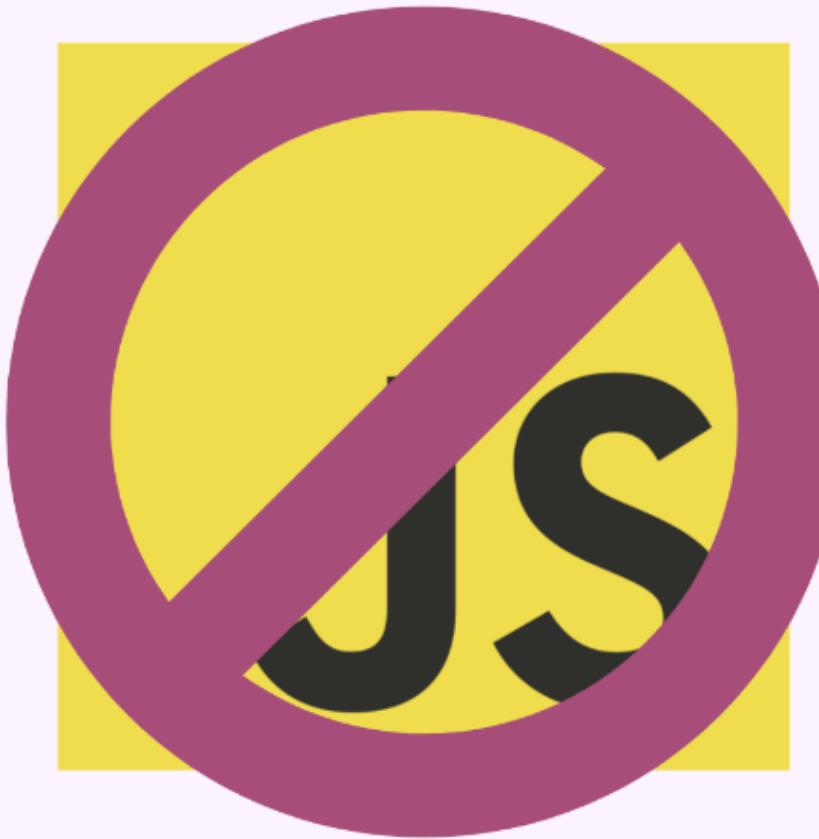


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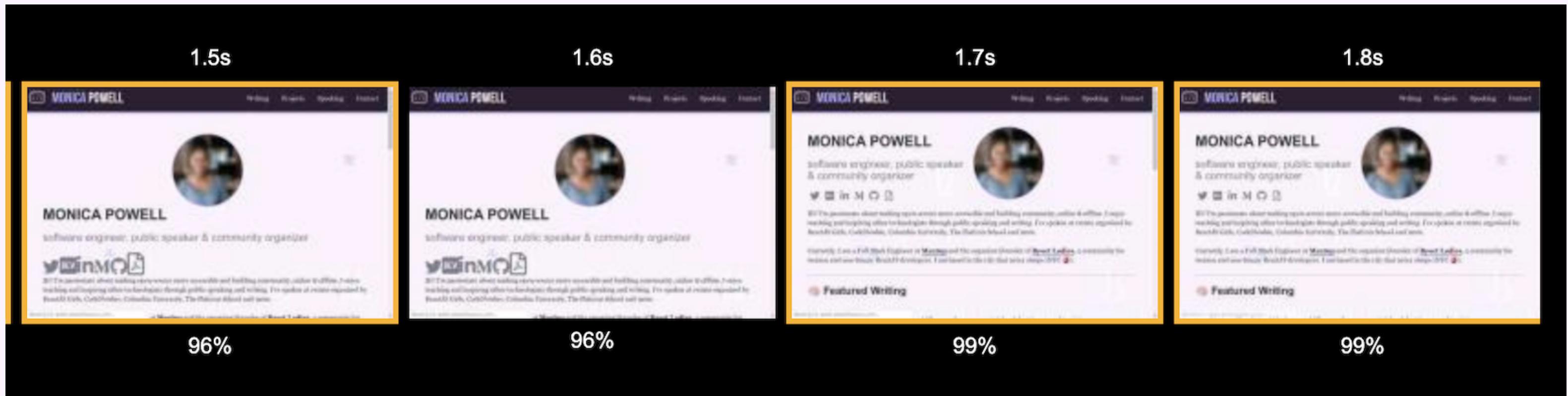
# DEBUGGING SSR HYDRATION ISSUES



- ▶ Disable JavaScript
- ▶ View filmstrips to see how the website hydrates



# Before: Styled icons with CSS from Font Awesome NPM Package

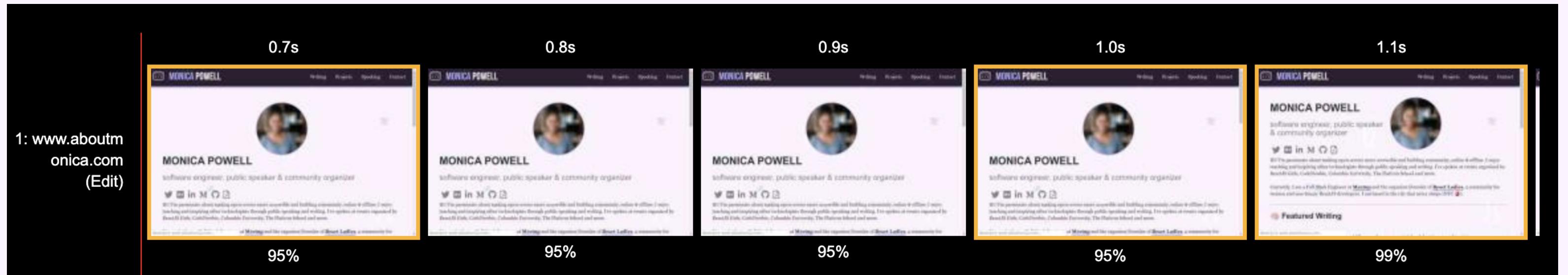


# SOLUTION

- ▶ Replicate the final styling with local CSS without relying on FontAwesome's external CSS which required JavaScript to be applied



# After: Styling icons locally and disable Font Awesome's CSS



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# IMMUTABLE LAYOUT

- ▶ Avoid unnecessary layout shifts during page load
- ▶ Implement layouts with placeholder/gap for expected client-side content
- ▶ Use CSS instead of JS to style the page



"JavaScript is a powerful language that can do some incredible things, but it's incredibly easy to jump to using it too early in development, when you could be using HTML and CSS instead..."

-- Iain Bean, Your blog doesn't need a JavaScript framework



...Consider the rule of least power: Don't use the more powerful language (JavaScript) until you've exhausted the capabilities of less powerful languages (HTML)."

-- Iain Bean, Your blog doesn't need a JavaScript framework



# ART DIRECTION: RULE OF LEAST POWER



## MONICA POWELL

Writing Projects Speaking Newsletter Contact

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# ART DIRECTION: HTML OR JAVASCRIPT?

- ▶ HTML art direction can be used to dynamically load of images based on screen size using srcset attributes with `<img>` and `<source>` instead of JavaScript.



# ART DIRECTION: WHY HTML?

- ▶ Swapping images at different screen sizes can be done with JavaScript or CSS instead of native HTML attributes however using HTML can improve page loading performance as it prevents unnecessarily preloading two images



# ART DIRECTION IN HTML



```
<picture>
  <source media="(min-width: 625px)" srcset="animonica-full.png" />
  <source srcset="animonica-headshot-cropped.png" />
  
</picture>
```



```
import React from "react"
import { useStaticQuery, graphql } from "gatsby"
import Img from "gatsby-image"

const Avatar = () => {
  const data = useStaticQuery(graphql`query {
    mobileImage: file(relativePath: { eq: "animonica-headshot-cropped.png" })
    {
      childImageSharp {
        fluid(maxWidth: 300, quality: 100) {
          ...GatsbyImageSharpFluid_tracedSVG
        }
      }
    }
    desktopImage: file(relativePath: { eq: "animonica-full.png" }) {
      childImageSharp {
        fluid(maxWidth: 300, quality: 100) {
          ...GatsbyImageSharpFluid_tracedSVG
        }
      }
    }
  `)
  const sources = [
    data.mobileImage.childImageSharp.fluid,
    {
      ...data.desktopImage.childImageSharp.fluid,
      media: `(min-width: 625px)`,
    },
  ]
  return <Img fluid={sources} alt="Illustrated Monica" />
}

export default Avatar
```



# SUMMARY

- ▶ When developing in a Server-Side Rendered context it's important to consider how the page loads and what data is or is not available on initial page load.
- ▶ CSS is a better tool for styling, especially in a Server-Side Rendered app



# RESOURCES

- ▶ <https://www.gatsbyjs.org/docs/react-hydration/>
- ▶ <https://joshwcomeau.com/react/the-perils-of-rehydration/>
- ▶ <https://reactjs.org/docs/reconciliation.html>
- ▶ <https://www.webpagetest.org/>



# THANK YOU!

SEE YOU IN CYBERSPACE



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