

# Render Here, Render There, Render Everywhere

An introduction to rendering  
options for the web

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UNFORGETTABLE  
DIGITAL  
CONNECTIONS





## Thomas Desmond

**Developer Advocate @ Sitecore**

- Frontend Developer Advocate
- 7+ years of development experience
- Lives in San Diego, California

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# Agenda

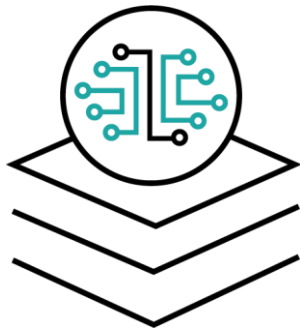
- 01 Important Performance Indicators
- 02 What is Rendering on the Web?
- 03 Rendering Options vs. Performance Indicators
- 04 Sitecore Offerings
- 05 No One Size Fits All



## Time To First Byte (TTFB)

**What:** The time between user requesting page to the browser getting the first byte of information from the server.

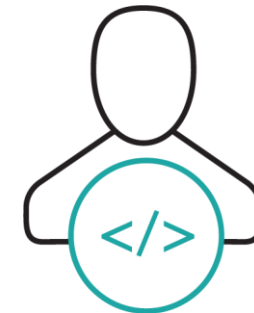
**Why:** Slow TTFB means slow load times. It's important how fast we can get data to the browser.



## First Contentful Paint (FCP)

**What:** The time for the first thing to be painted to the screen.

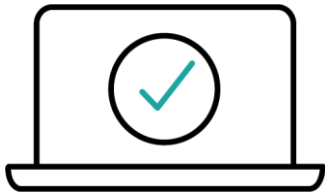
**Why:** A blank page is discouraging to a visitor. Seeing something loaded is better than nothing.



## Largest Contentful Paint (LCP)

**What:** The time it takes for the largest image or text block to become visible.

**Why:** The largest item is usually the important piece of a page. This is what the visitor came for.



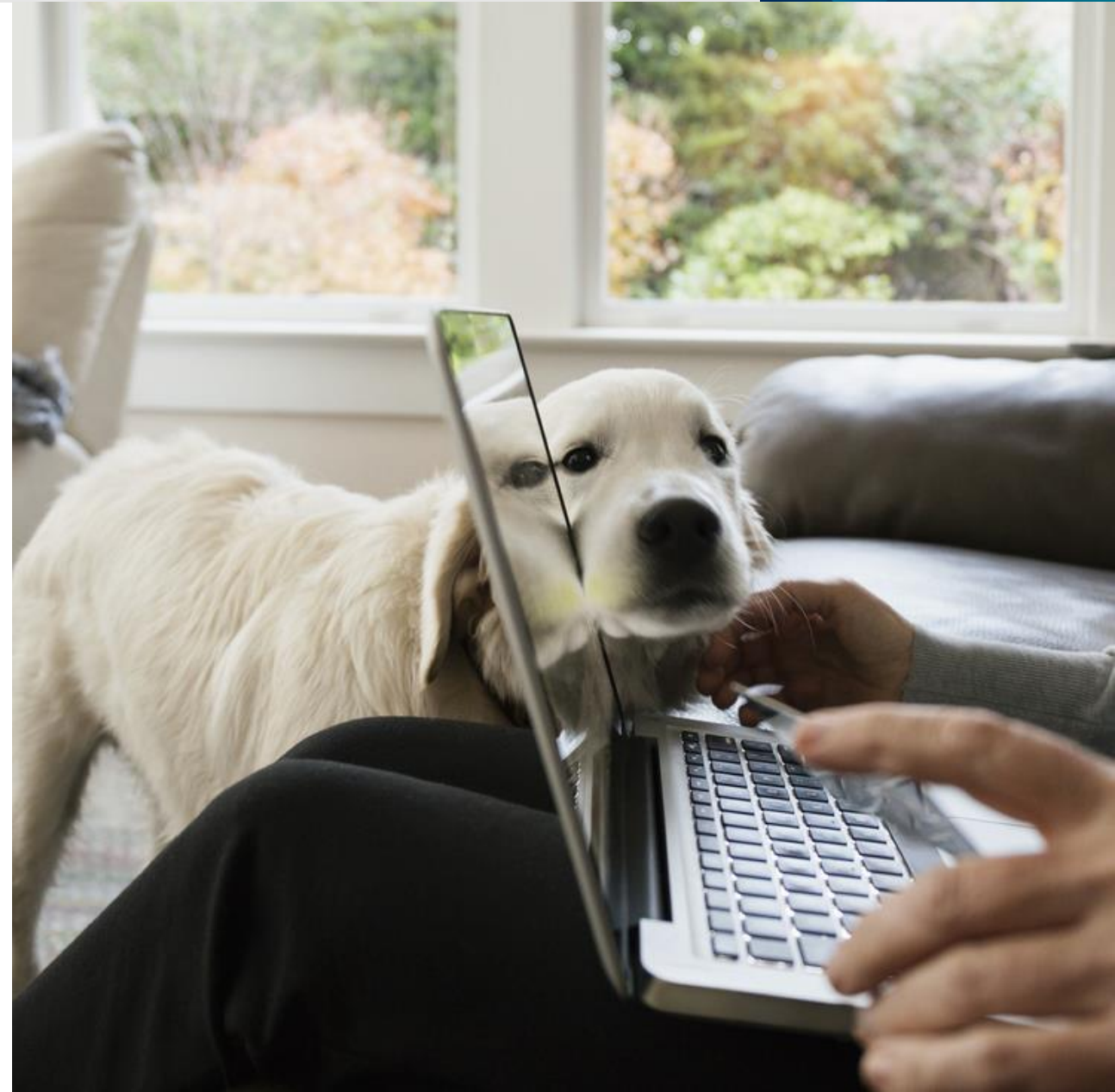
## Time To Interactive (TTI)

**What:** The time to become FULLY interactive

**Why:** A page may look like it is all their visually but feels frozen when user tries to interact



- What is Rendering?
- The Big Three Options
  - Server Side Rendering
  - Client Side Rendering
  - Static Rendering





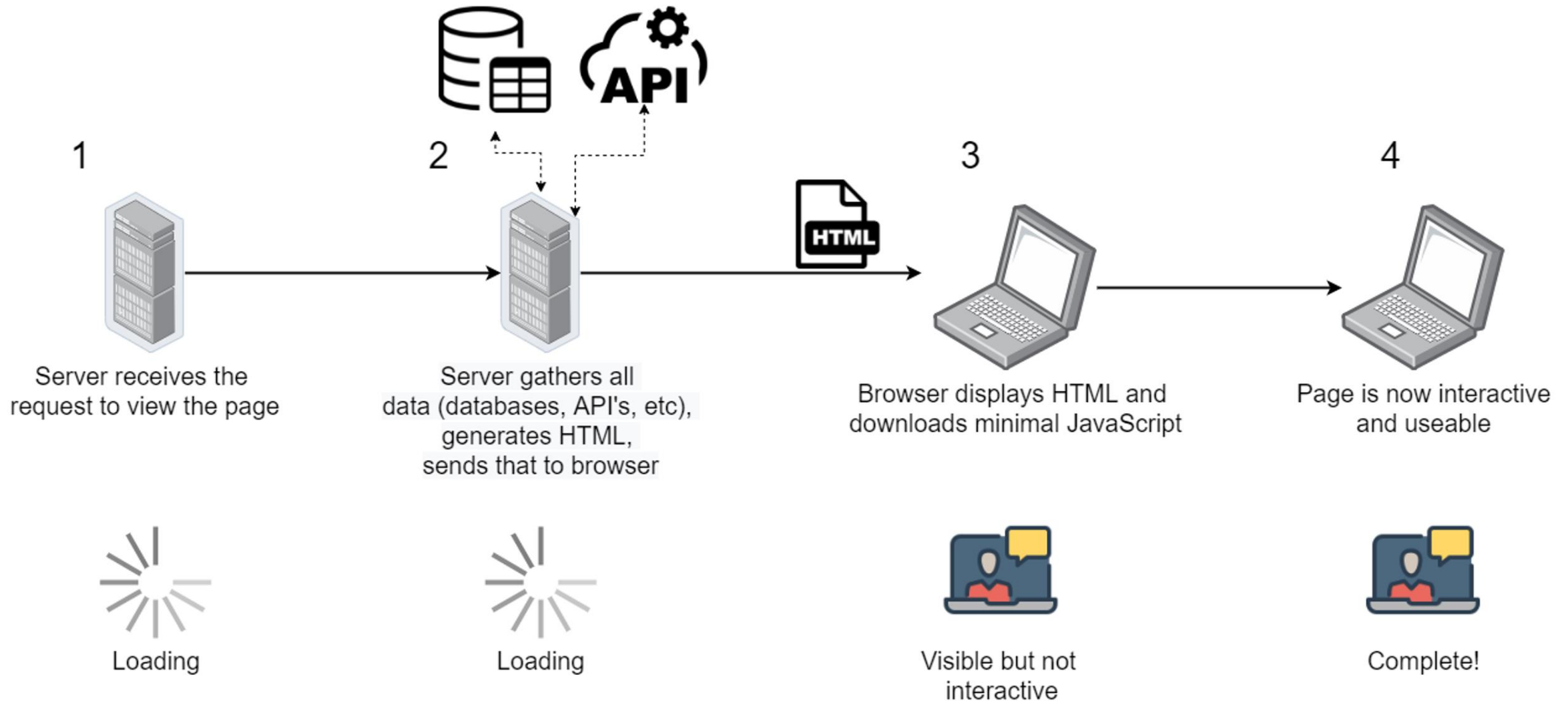
## Server Side Rendering (SSR)

- Putting the work of rendering the HTML on the server
- Server more powerful than visitor's machine
- Browser executes minimal JavaScript
- **The Good:** 👍 FCP, TTI, SEO
- **The Bad:** 🗨️ TTFB, Blank Page



# Server Side Rendering Flow

## SSR





## Client Side Rendering (CSR)

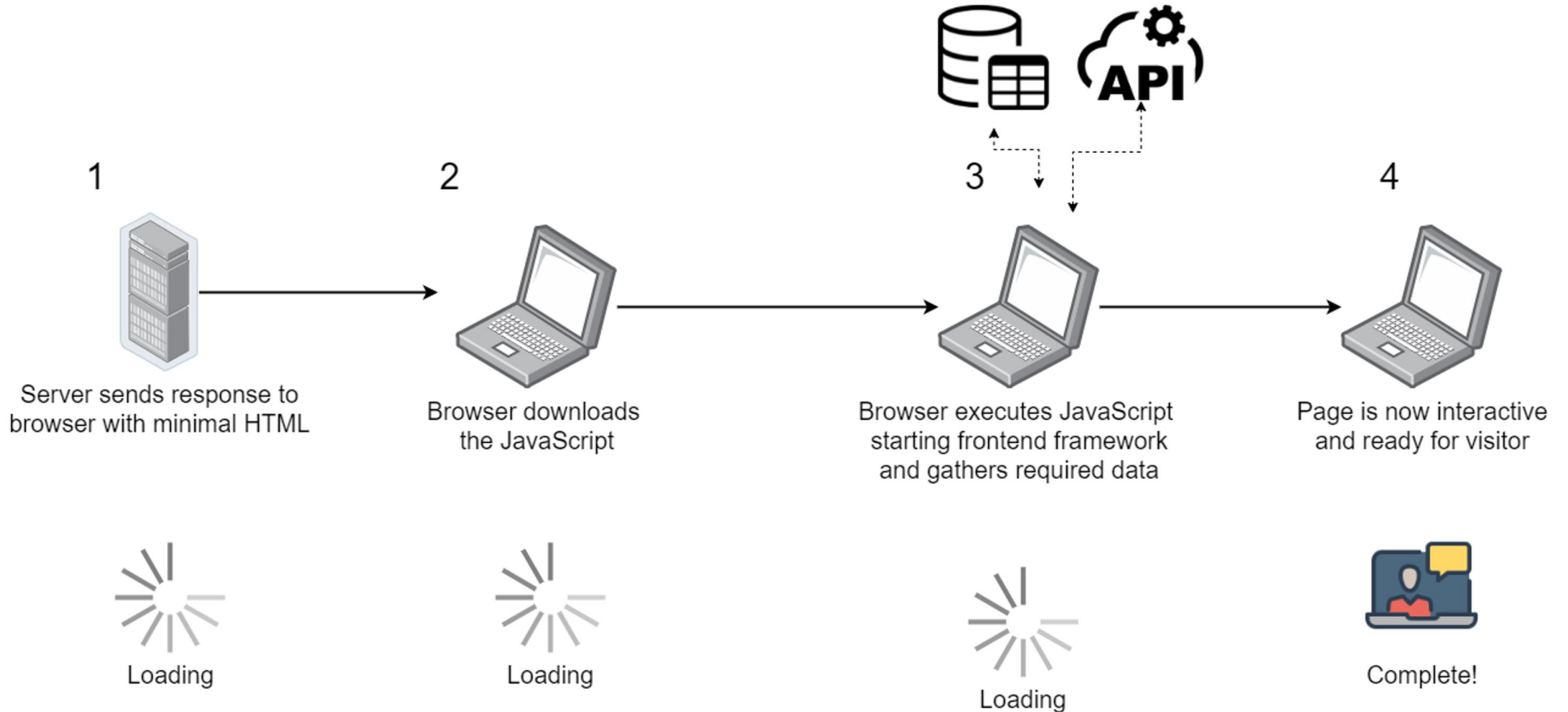
- Server sends minimal HTML with links to JavaScript to download
- Site visitor's browser does the rendering work
- **The Good:** 👍 TTFB, Flexibility, Low server costs
- **The Bad:** 💬 SEO, TTI, JavaScript performance

```
> <head>...</head>
▼ <body>
  <noscript>You need to enable JavaScript to run this app.</noscript>
  > <div id="root">...</div>
  <!--
    This HTML file is a template.
    If you open it directly in the browser, you will see an empty page.

    You can add webfonts, meta tags, or analytics to this file.
    The build step will place the bundled scripts into the <body> tag.

    To begin the development, run `npm start` or `yarn start`.
    To create a production bundle, use `npm run build` or `yarn build`.
  -->
  <script src="/static/js/bundle.js"></script>
  <script src="/static/js/0.chunk.js"></script>
  <script src="/static/js/main.chunk.js"></script>
</body>
> <pwa-extension-ng-components style="
  font-weight: normal;
  font-family: Overpass Regular, sans-serif;
  font-size: 14px;
">...</pwa-extension-ng-components>
> <pwa-dictionary-popup-wrapper style="display: none !important;">...</pwa-dictionary-
popup-wrapper>
</html>
```

## CSR



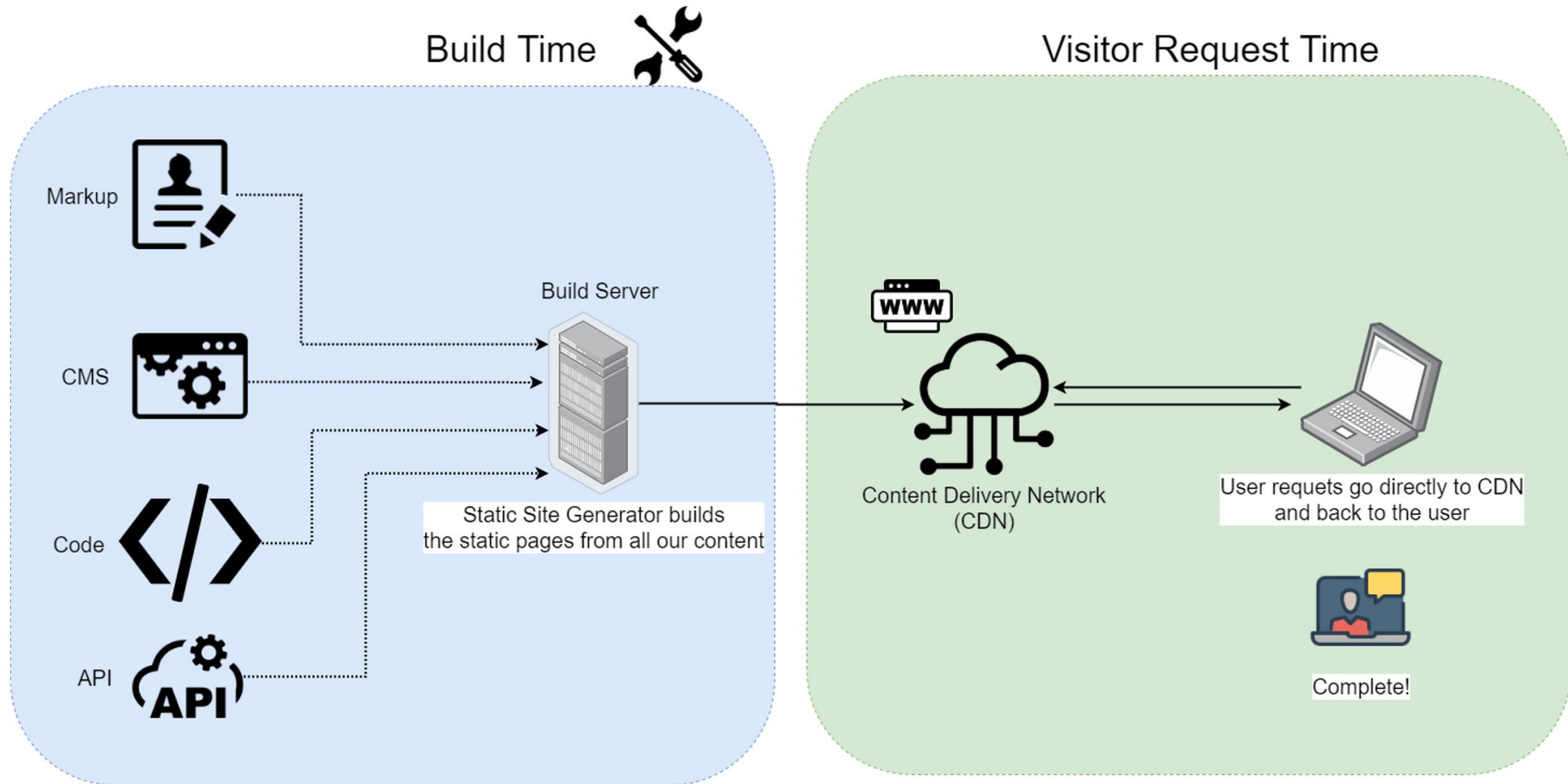
## Static Site Generation (SSG)

- Ahead of Time Rendering
- Build out static pages before anyone even visits the site
- Able to be hosted on low-cost Content Delivery Network (CDN)
- **The Good:** 👍 TTFB, FCP, TTI, SEO
- **The Bad:** 🗨️ Not flexible, Rehydration often required









# Static Site Generation Flow

## SSG



# Putting Them All Together



SSR	CSR	SSG
Rendering work completed on server	Rendering done on the user's machine within browser	Rendering completed at build time before users visits site
✓ Personalization	✓ Personalization	✗ Personalization requires rehydration
 SEO, FCP, TTI  TTFB, Blank Page Syndrome	 FCP, TTFB, Low server costs  SEO, TTI, Requires JavaScript	 SEO, TTFB, FCP, TTI  Inflexible, build times
Common Frameworks: ASP.NET, Next.js, PHP (Laravel), Node.js	Common Frameworks: React, Angular, Vue	Common Frameworks: Next.js, Gatsby, Hugu, Nuxt





- Why limit yourself to only one?
- Advanced Options
  - Two Pass Rendering with Hydration
  - SSR with CSR
  - SSG with CSR

# Sitecore Product Offerings for SSR, CSR, SSG



SSR	Sitecore MVC SXA Sitecore Headless Services (.NET, Next.js, Angular, React, Vue)
CSR	Sitecore Headless Services (Angular, React, Vue)
SSG	Sitecore Headless Services (Next.js) Experience Edge for XM and Content Hub

# No one size fits all

- Considerations
  - Performance indicators
  - SEO
  - Update frequency
  - Visitor location
  - Team development skills
  - Costs
  - Long term
  - And More
- Rule of least power

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# Thank you

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