</> htmx 2.0 & Web Components

A Perfect Match for Frontend Development

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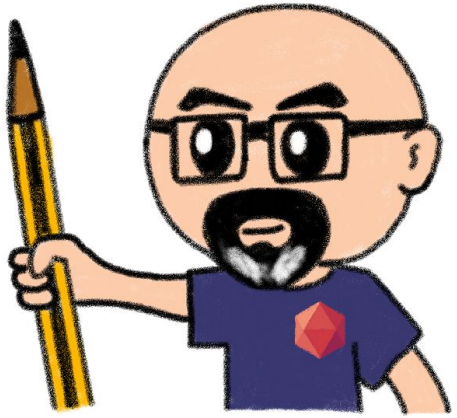

Horacio Gonzalez

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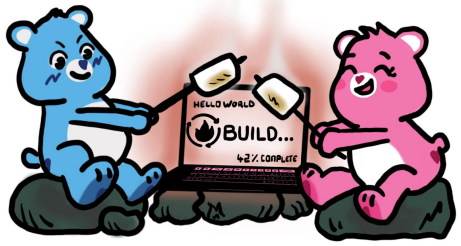
Espagnol Perdu en Bretagne

Finist Devs



Head of DevRel

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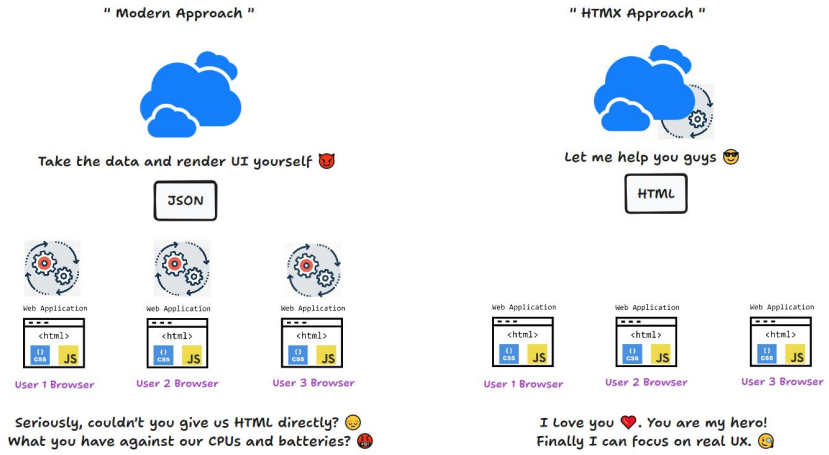
Create modern user interfaces with
the simplicity and power of hypertext



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Arbitrary Limitations of HTML

- Why can only `<a>` and `<form>` make HTTP(S) requests?
- Why can only click and submit events trigger them?
- Why are only `GET` and `POST` methods available?
- Why do `<a>` and `<form>` force a full page reload?
- Why so many arbitrary constraints in HTML?

Goal: Interactivity in Hypertext

htmx extends HTML capabilities to:

- Perform AJAX requests
- Handle CSS transitions
- Work with WebSockets
- Process server-sent events

All through declarative HTML attributes

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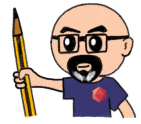

But, what's the point?

It sounds nice and semantic, but what’s the real benefit?

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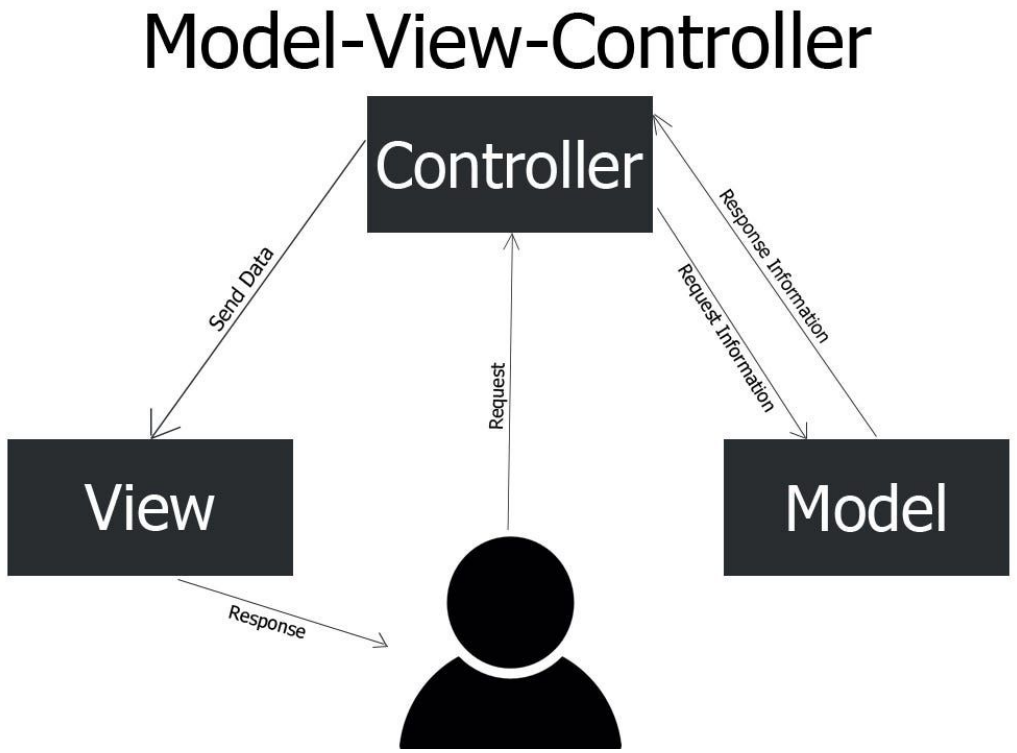
A Quick Look Back

A time when dinosaurs like me coded with Struts

Remember MVC?



With its page-by-page navigation

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The Golden Age of MVC Frameworks

RAILS

Sinatra

play

STRUTS

django

GRAILS

Generating HTML views

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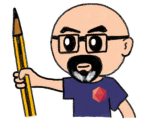
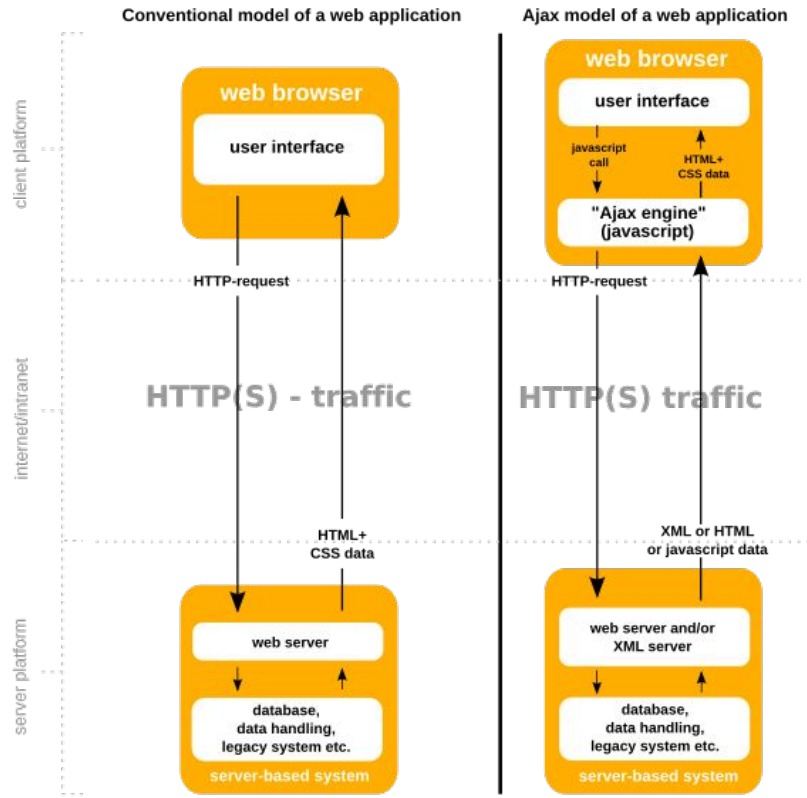


2005: The Arrival of AJAX



The birth of Web 2.0

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Web Pages Become Dynamic Apps

Powered by JavaScript and jQuery

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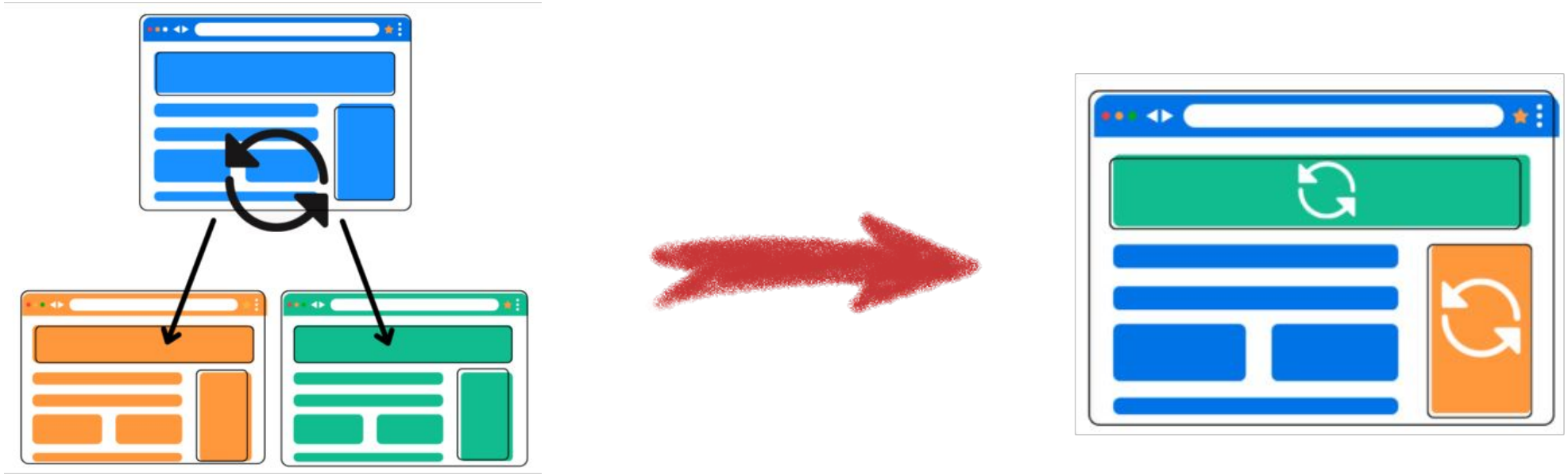
Shift to Single Page Applications (SPA)



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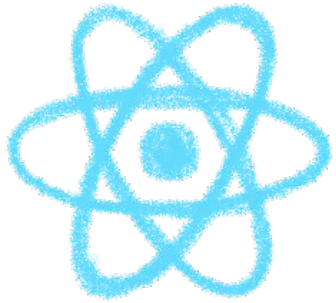
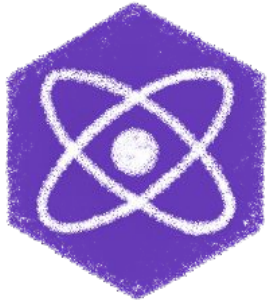
Increasing Complexity



Lit



The rise of JavaScript frameworks

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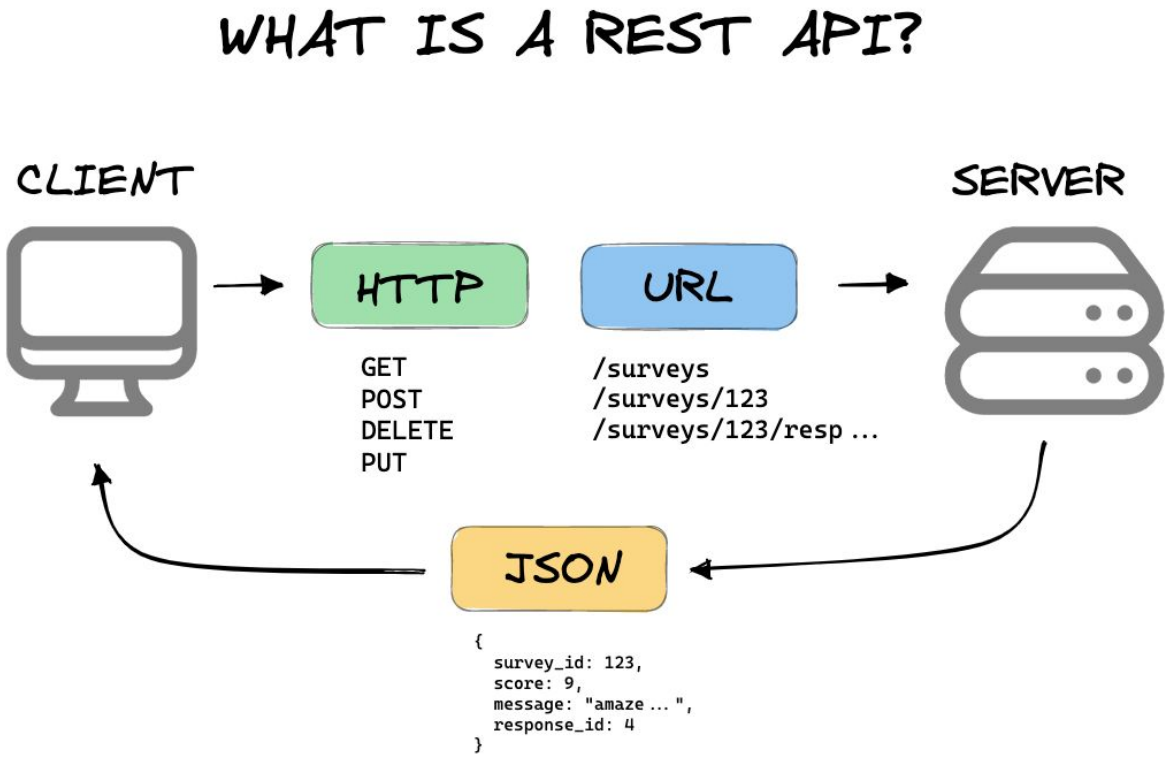
Backend Becomes a REST API



Serving JSON

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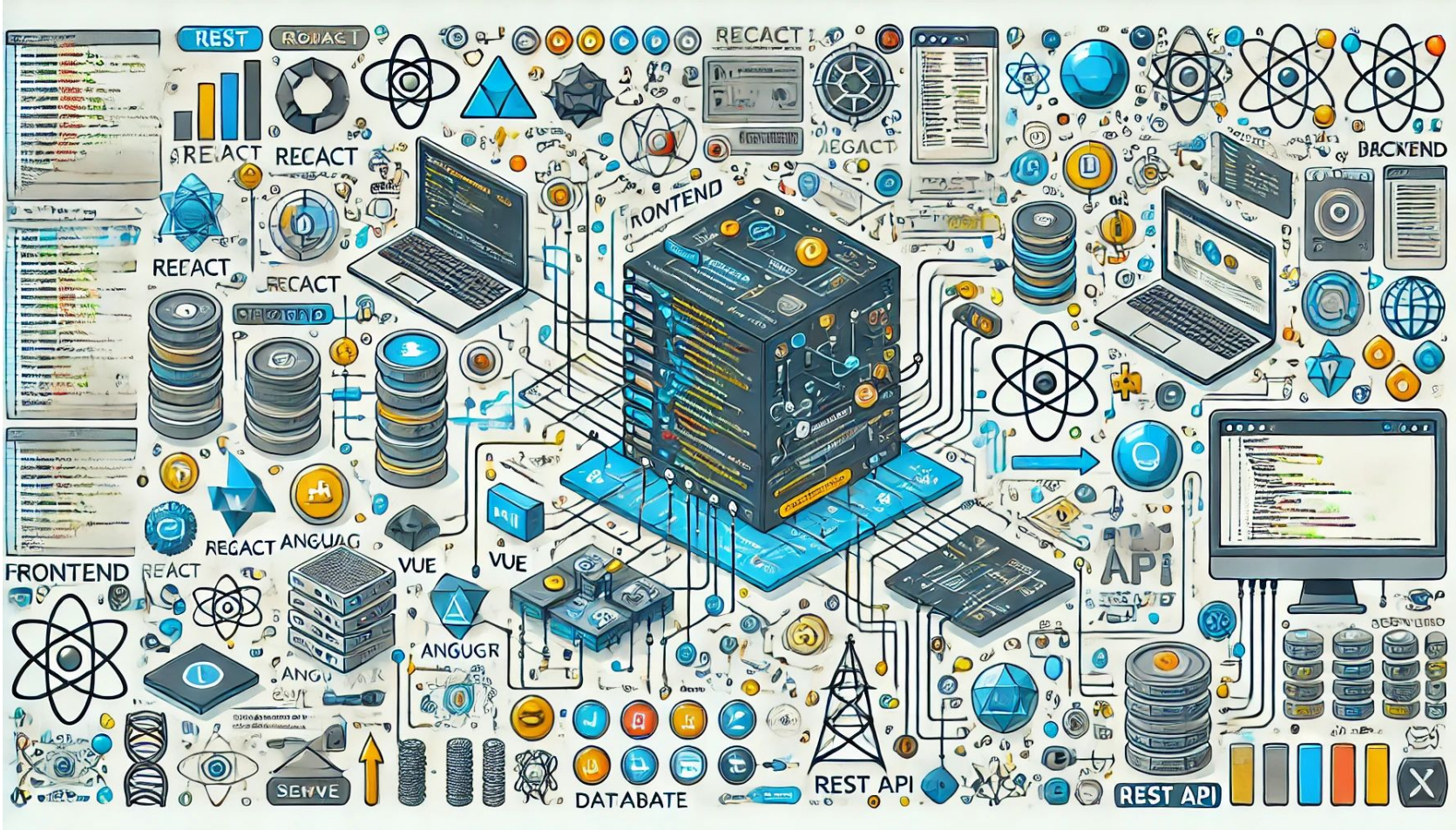
We Gained Functionality



But lost simplicity and semantics

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Overkill for Many Applications

Sometimes we just need a simple web page
with a bit of interactivity

</> htmx Might Be the Right Solution

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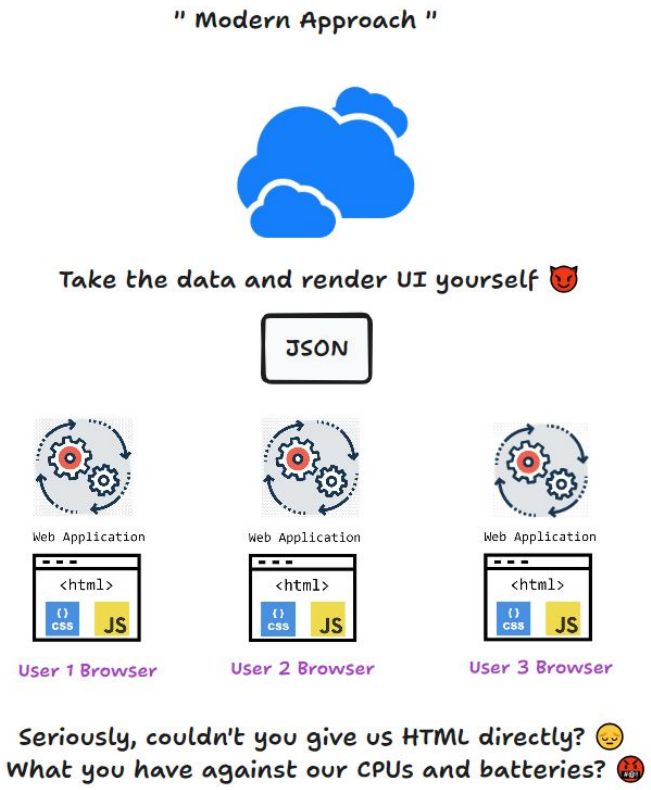
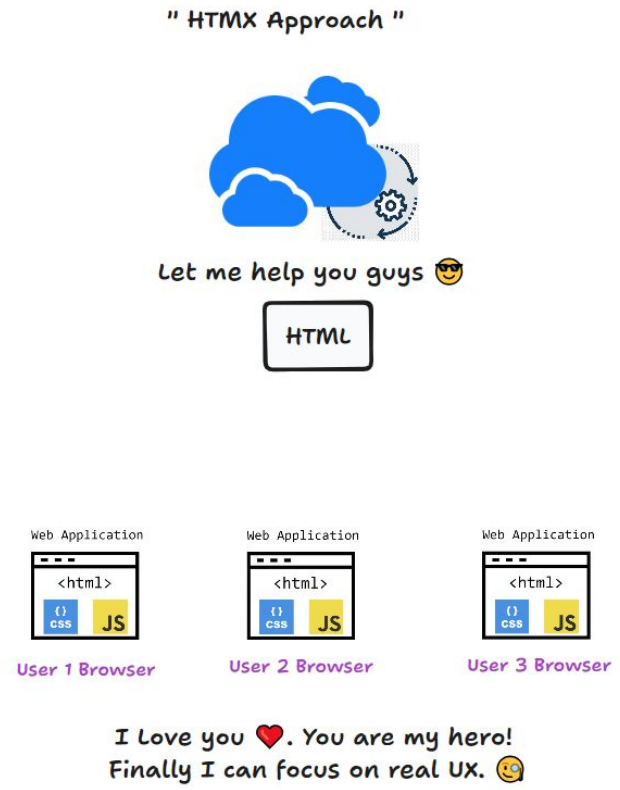
It's extended HTML

- Simplicity
- Semantics
- Interactivity





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Too much theory, show us a demo!

Examples, examples, examples!

example-01.html

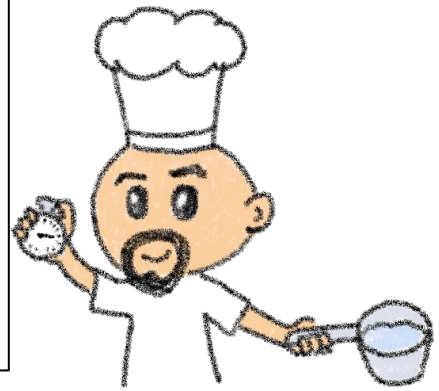
```html
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<!-- have a button that POST on a click via AJAX
    and replace the content of #status div
    with the response -->

<button hx-post="/clicked" hx-target="#status">
   Click Me
</button>

<div id="status">Not yet clicked</div>
```

</> htmx



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Sending POST on a button click

./html-examples/html-example-01.html

```
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<!-- have a button that POST on a click via AJAX
    and replace the content of #status div
    with the response -->

<button hx-post="/clicked" hx-target="#status">
   Click Me
</button>

<div id="status">Not yet clicked</div>
```

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GET, POST, PUT, DELETE...

./html-examples/html-example-02.html

```
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<div>
 <button hx-get="/test-methods" hx-target="#status">Send GET</button>
 <button hx-post="/test-methods" hx-target="#status">Send POST</button>
 <button hx-put="/test-methods" hx-target="#status">Send PUT</button>
 <button hx-delete="/test-methods" hx-target="#status">Send DELETE</button>
</div>

<div id="status">No request sent</div>
```

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Using response to replace elements

./html-examples/html-example-03.html

```
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<div id="test-replace">
  <button hx-get="/test-replace/innerHTML">
    If you click, this message will be replaced
  </button>
  <button hx-get="/test-replace/outerHTML" hx-swap="outerHTML">
    If you click, this button will become a div
  </button>
  <button hx-get="/test-replace/delete" hx-swap="delete">
    If you click, this button will disappear when the response is received
  </button>
  <button hx-get="/test-replace/none" hx-swap="none">
    If you click, nothing changes, the response is ignored
  </button>
</div>
```

</> htmx

Choosing when to send requests

./html-examples/html-example-04.html

```
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<!-- By default, AJAX requests are triggered by the “natural” event of an element: -->
<div id="test-triggers">
  <button hx-get="/trigger/natural" hx-target="#status">
    In a button the natural event is a click
  </button>
  <button hx-trigger="mouseover" hx-get="/trigger/mouseover" hx-target="#status">
    This button triggers on mouseover
  </button>
  <button hx-trigger="mouseenter" hx-get="/trigger/mouseenter" hx-target="#status">
    This button triggers on mouseenter
  </button>
  <button hx-trigger="mouseleave" hx-get="/trigger/mouseleave" hx-target="#status">
    This button triggers on mouseleave
  </button>
</div>

<div id="status">No AJAX request sent yet</div>
```

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More triggering options

./html-examples/html-example-05.html

```
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<!-- By default, AJAX requests are triggered by the “natural” event of an element: -->
<div id="test-triggers">
 <button hx-trigger="every 5s" hx-get="/trigger/5seconds" hx-target="#status">
   Sends request every 5 seconds, no event needed
 </button>
 <button hx-trigger="click[ctrlKey]" hx-get="/trigger/ctrlclick" hx-target="#status">
   Sends request on click while pressing Ctrl
 </button>
 <button hx-trigger="click[ctrlKey] once" hx-get="/trigger/ctrlclickonce" hx-target="#status">
   Sends request on the first click while pressing Ctrl
 </button>
</div>

<div id="status">No AJAX request sent yet</div>
```

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A spinner to ease you wait

./html-examples/html-example-06.html

```
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<!-- By default, AJAX requests are triggered by the “natural” event of an element: -->
<div id="test-triggers">
 <button hx-trigger="every 5s" hx-get="/trigger/5seconds" hx-target="#status">
   Sends request every 5 seconds, no event needed
 </button>
 <button hx-trigger="click[ctrlKey]" hx-get="/trigger/ctrlclick" hx-target="#status">
   Sends request on click while pressing Ctrl
 </button>
 <button hx-trigger="click[ctrlKey] once" hx-get="/trigger/ctrlclickonce" hx-target="#status">
   Sends request on the first click while pressing Ctrl
 </button>
</div>

<div id="status">No AJAX request sent yet</div>
```

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Des extensions presque à l'infini

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extensions

This site is a searchable collection of extensions for htmx 2.0. They are not guaranteed to work with the htmx 1.x codebase.

Core extensions are actively maintained by the htmx team.

Community extensions are contributed by the community or rarely touched by the htmx team (although they still work!)

▶ **Contributing**

Core

search core extensions

Name	Description
sse	Provides support for Server Sent Events directly from HTML.
ws	Provides bi-directional communication with Web Sockets servers directly from HTML

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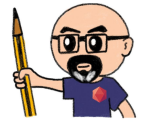
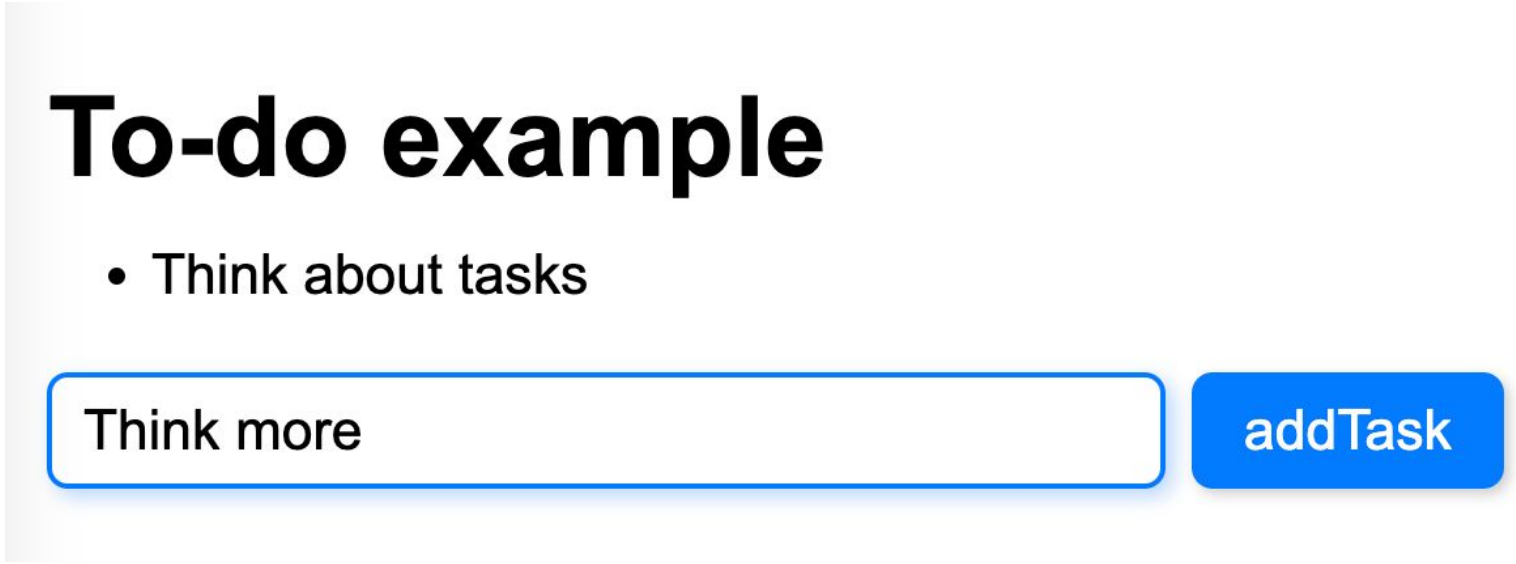


Time for More Code!

Let's see a complete example



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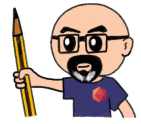

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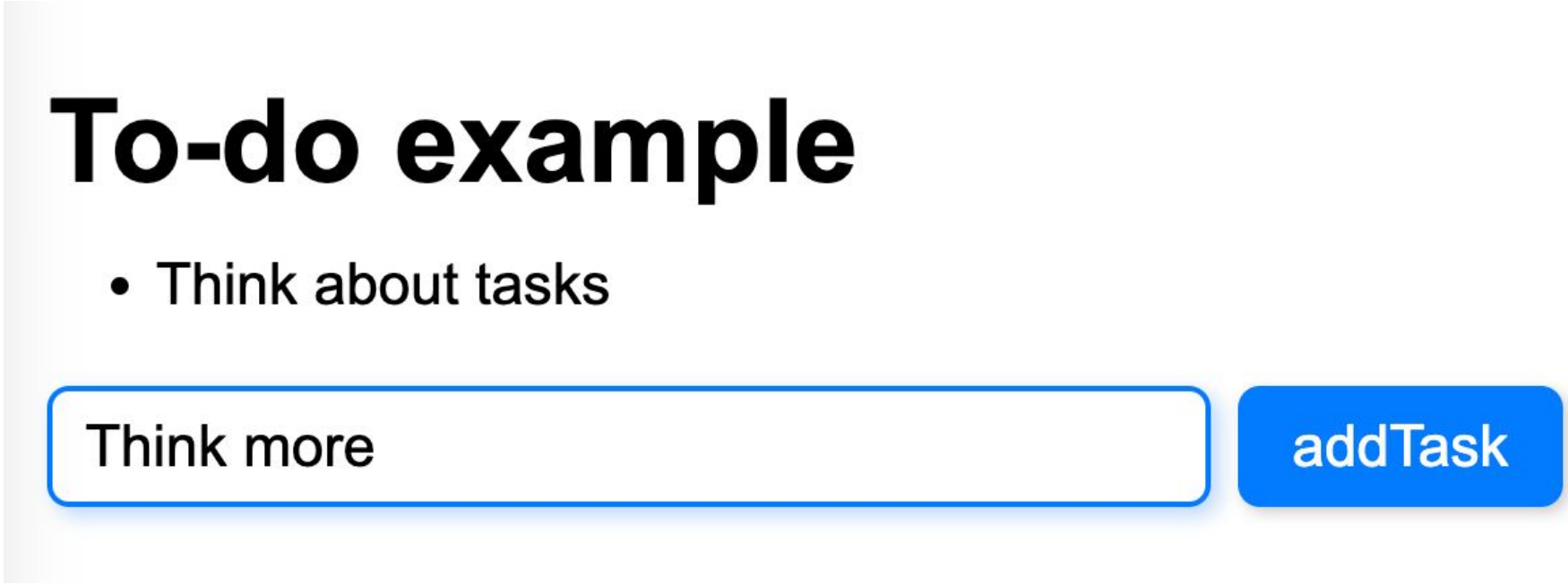
Let's do a to-do list



From `Hello World` to a `To-do List`

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What the heck are web component?

The 3 minutes context

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Web Components

Web standard W3C

Web Components

Available in all modern browsers:

Firefox, Safari, Chrome

Web Components

Create your own HTML tags

Encapsulating look and behavior

Web Components

Fully interoperable

With other web components, with any framework

Web Components

</>

CUSTOM ELEMENTS

SHADOW DOM

TEMPLATES

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Custom Element

</> To define your own HTML tag

```
<body>
  ...
  <script>
    window.customElements.define('my-element',
      class extends HTMLElement {...});
  </script>
  <my-element></my-element>
</body>
```

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Shadow DOM

To encapsulate subtree and style in an element

```
<button>Hello, world!</button>
<script>
var host = document.querySelector('button');
const shadowRoot = host.attachShadow({mode:'open'});
shadowRoot.textContent = 'こんにちは、影の世界!';
</script>
```

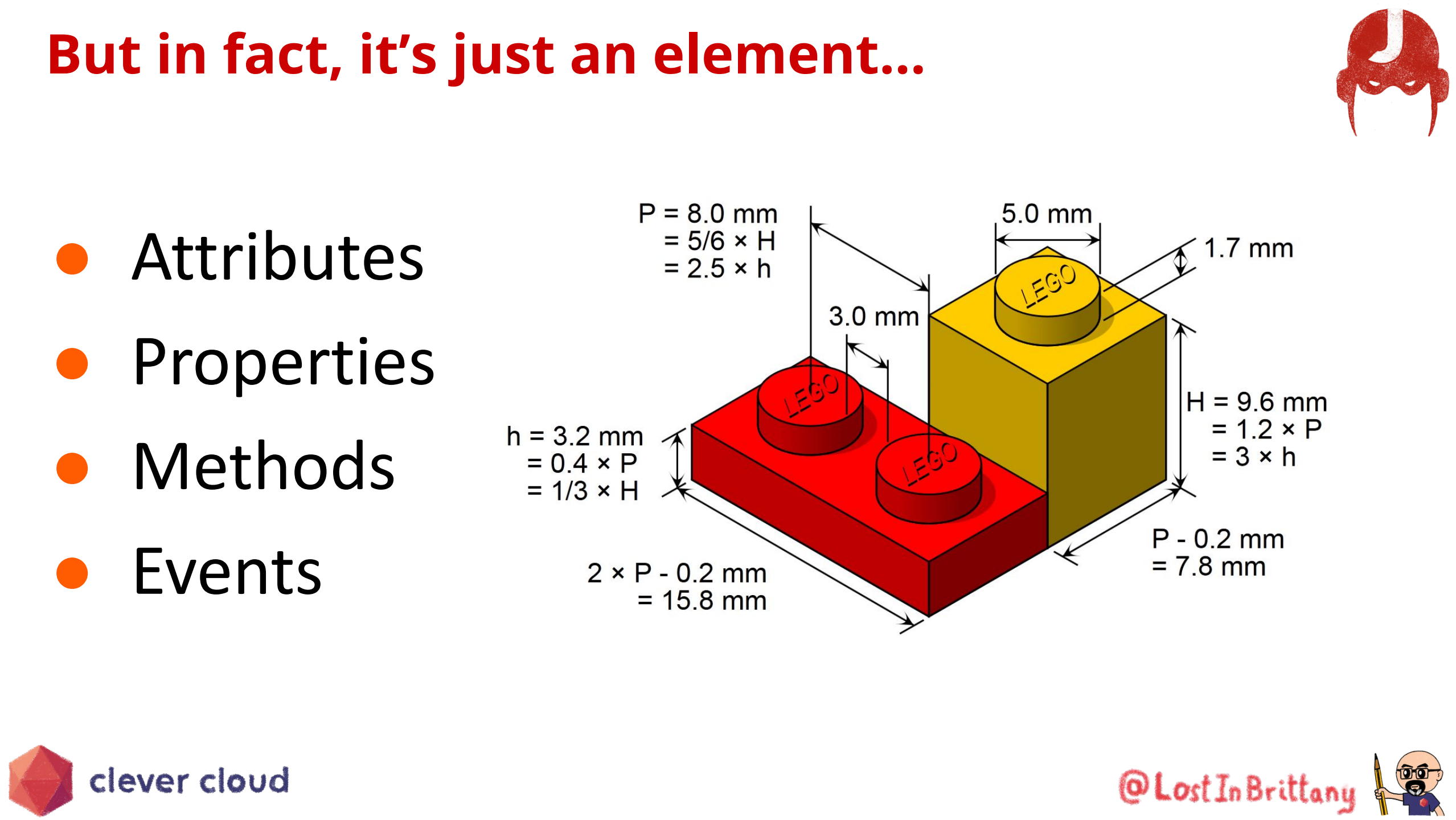
Template

To have clonable document template

```
<template id="mytemplate">
  <img src="" alt="great image">
  <div class="comment"></div>
</template>

var t = document.querySelector('#mytemplate');
// Populate the src at runtime.
t.content.querySelector('img').src = 'logo.png';
var clone = document.importNode(t.content, true);
document.body.appendChild(clone);
```

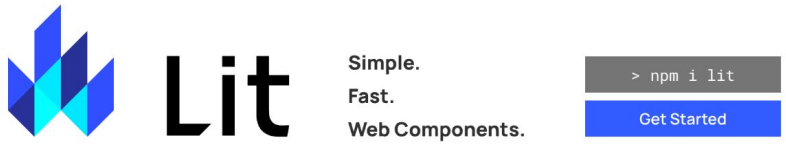
But in fact, it's just an element…



- Attributes
- Properties
- Methods
- Events

Lit

Simple. Fast. Web Components



Simple

Skip the boilerplate

Building on top of the Web Components standards, Lit adds just what you need to be happy and productive: reactivity, declarative templates and a handful of thoughtful features to reduce boilerplate and make your

Fast

Tiny footprint, instant updates

Weighing in at around 5 KB (minified and compressed), Lit helps keep your bundle size small and your loading time short. And rendering is blazing fast, because Lit touches only the dynamic parts of your UI when updating

Web Components

Interoperable & future-ready

Every Lit component is a native web component, with the superpower of interoperability. Web components work anywhere you use HTML, with any framework or none at all. This makes Lit ideal for building shareable

Modern lightweight web components

Lit

Simple.
Fast.
Web Components.

```
> npm i lit
```

Get Started

Simple

Skip the boilerplate

Building on top of the Web Components standards, Lit adds just what you need to be happy and productive: reactivity, declarative templates and a handful of thoughtful features to reduce boilerplate and make your

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For the new web paradigm

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LitElement

```
import { LitElement, html } from 'lit-element';

// Create your custom component
class CustomGreeting extends LitElement {
 // Declare properties
 static get properties() {
   return {
     name: { type: String }
   };
 }
 // Initialize properties
 constructor() {
   super();
   this.name = 'World';
 }
 // Define a template
 render() {
   return html`<p>Hello, ${this.name}!</p>`;
 }
}
// Register the element with the browser
customElements.define('custom-greeting', CustomGreeting);
```

Lightweight web-components using lit-html

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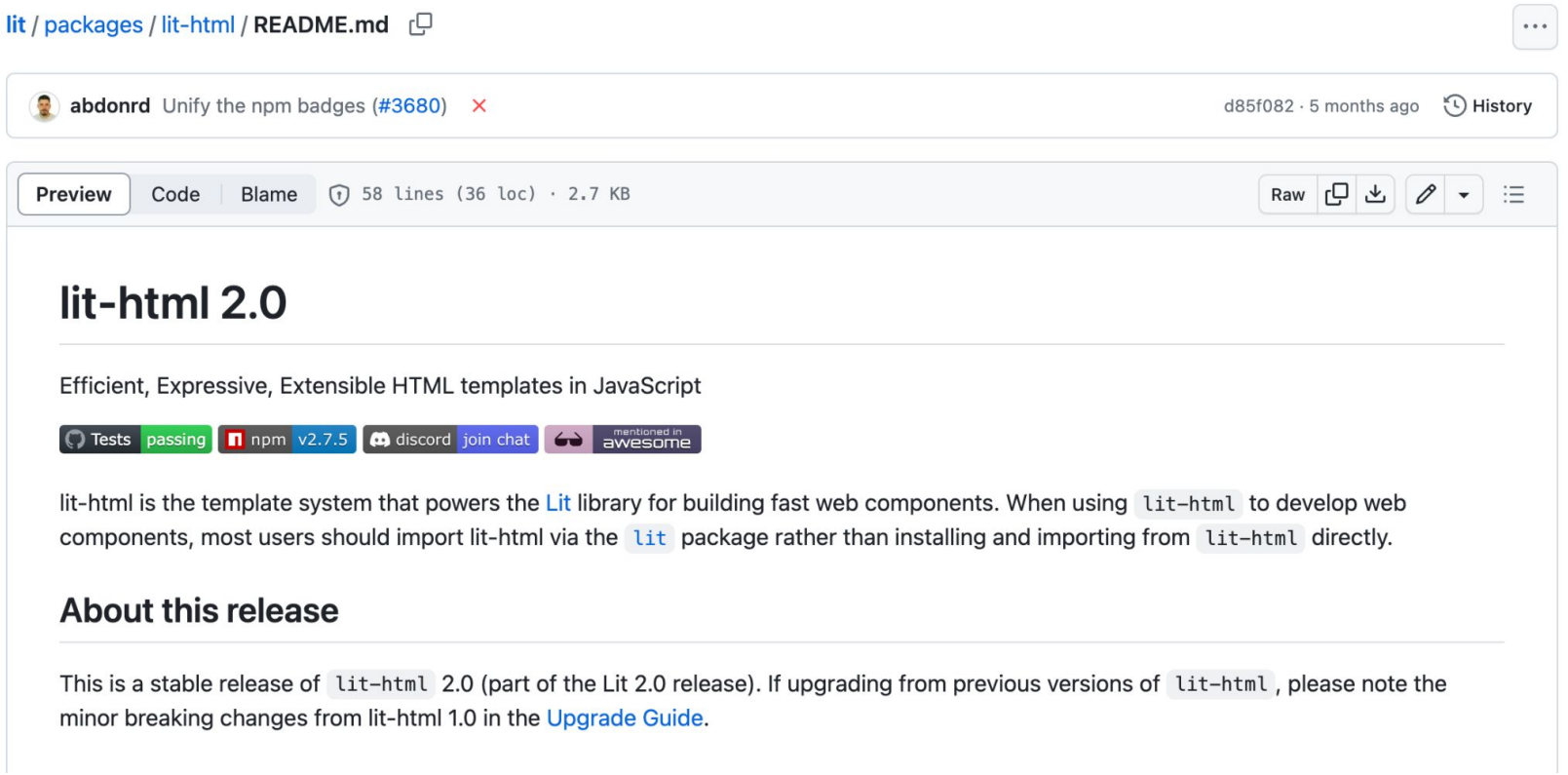
Based on lit-html



An efficient, expressive, extensible HTML templating library for JavaScript

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Do you know tagged templates?

```
function uppercaseExpression(strings, ...expressionValues) {
  var finalString = ''
  for ( let i = 0; i < strings.length; i++ ) {
    if (i > 0) {
      finalString += expressionValues[i - 1].toUpperCase()
    }
    finalString += strings[i]
  }
  return finalString
}
const expressions = [ 'Sophia Antipolis', 'RivieraDev', 'Thank you'];
console.log(uppercase`Je suis à ${expression[0]} pour ${expression[1]. $expression[2]!`
```

Little known functionality of template literals

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lit-html Templates

```
let myTemplate = (data) => html`
  <h1>${data.title}</h1>
  <p>${data.body}</p>
`;
```

Lazily rendered

Generates a TemplateResult

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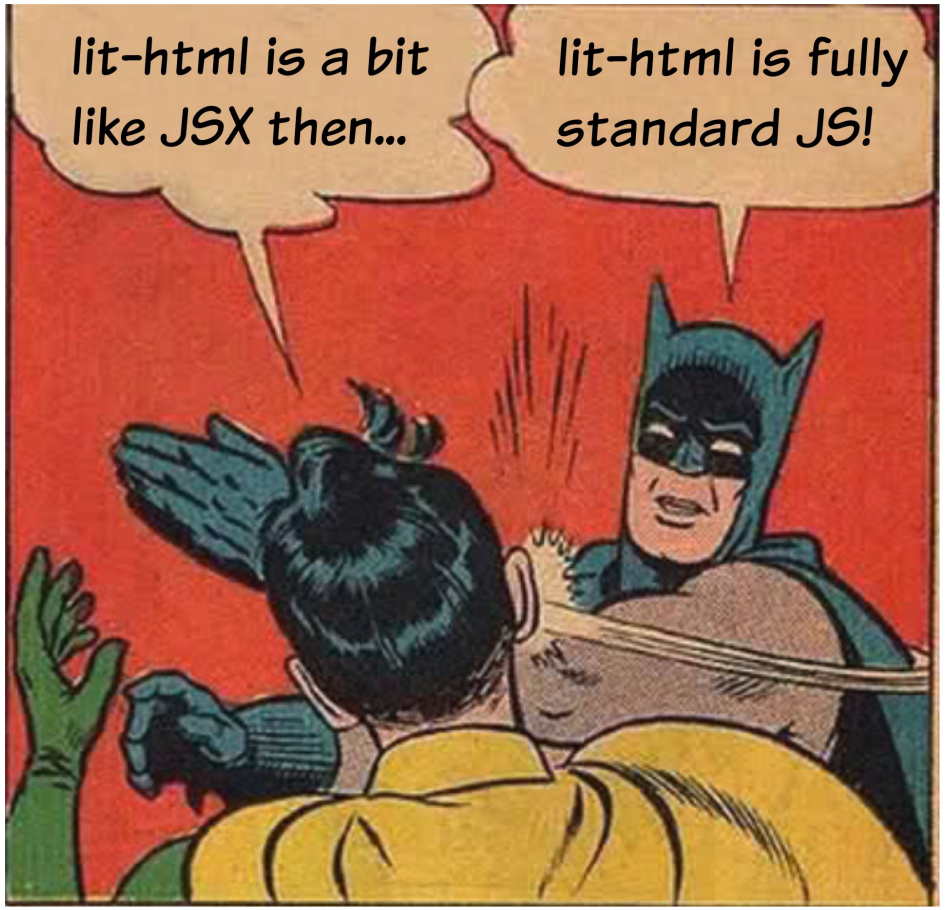
It's a bit like JSX, isn't it?



The good sides of JSX... but in the standard!

Too much theory, show us a demo!

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Custom Greeting example

```
import { LitElement, html } from 'lit-element';

// Create your custom component
class CustomGreeting extends LitElement {
 // Declare properties
 static get properties() {
   return {
     name: { type: String }
   };
 }
 // Initialize properties
 constructor() {
   super();
   this.name = 'World';
 }
 // Define a template
 render() {
   return html`<p>Hello, ${this.name}!</p>`;
 }
}
// Register the element with the browser
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```

Lightweight web-components using lit-html

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My Lit Counter example

Let's do an interactive counter

Lit & </> htmx

Love at first <tag>

Lit

</> htmx

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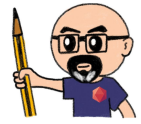

htmx for structure, Lit to encapsulate logic

</> htmx Lit

To htmx, Lit elements are just regular tags

Too much theory, show us a demo!

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That's all, folks!

Thank you all!

Please leave your feedback!

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