



`</>` htmx & Web Components

A Perfect Match for Frontend Development



@LostInBrittany

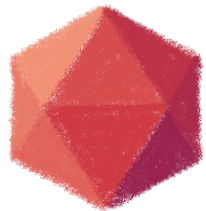
Horacio Gonzalez



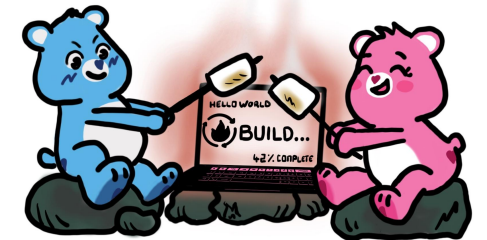
@LostInBrittany

Espagnol Perdu en Bretagne

Head of DevRel



clever cloud



</> htmx

Create modern user interfaces with
the simplicity and power of hypertext

" Modern Approach "



Take the data and render UI yourself 🙄

JSON



User 1 Browser



User 2 Browser



User 3 Browser

Seriously, couldn't you give us HTML directly? 🙄
What you have against our CPUs and batteries? 🙄

" HTMX Approach "



Let me help you guys 😊

HTML

Web Application



User 1 Browser

Web Application



User 2 Browser

Web Application



User 3 Browser

I Love you ❤️. You are my hero!
Finally I can focus on real UX. 😊

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

`</> htmx`

But, what's the point?

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



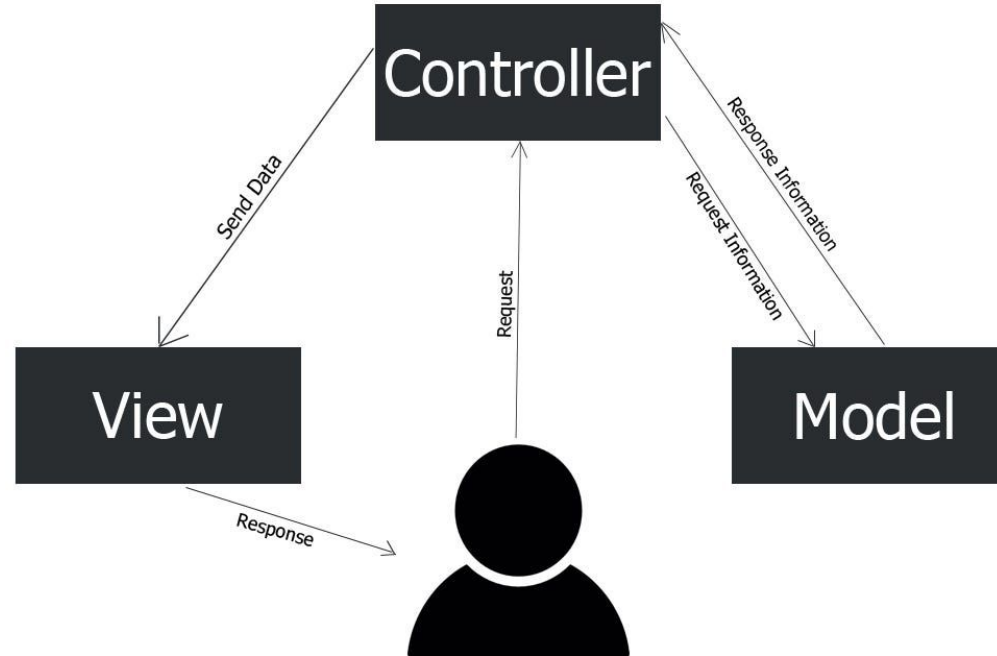
A Quick Look Back



A time when dinosaurs like me coded with Struts

Remember MVC?

Model-View-Controller



With its page-by-page navigation

The Golden Age of MVC Frameworks



Sinatra

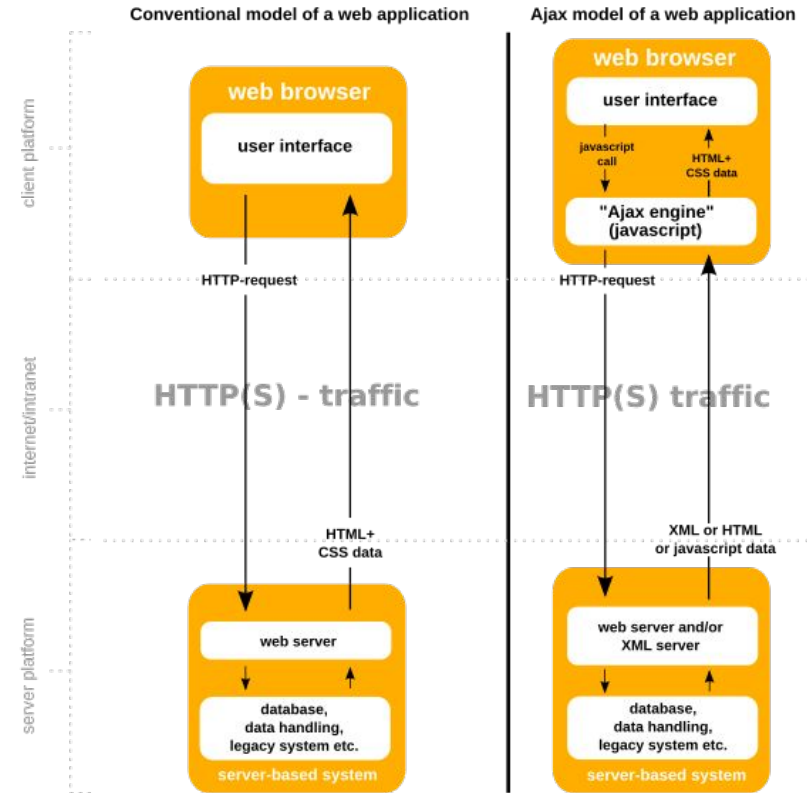


django



Generating HTML views

2005: The Arrival of AJAX



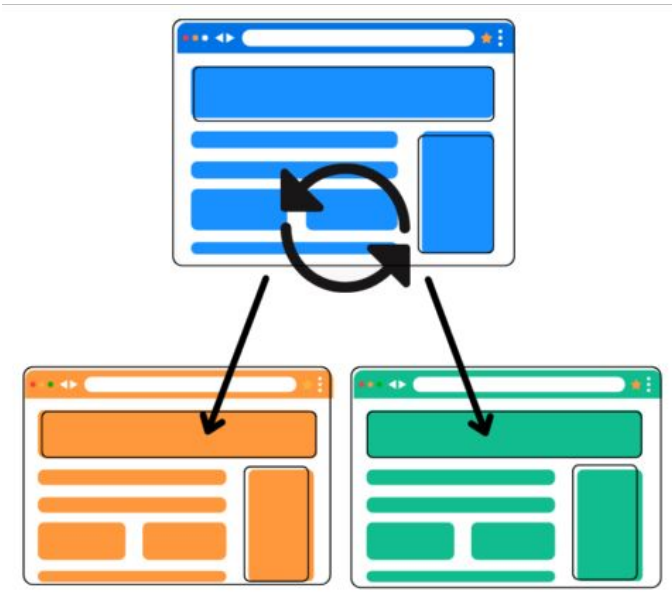
The birth of Web 2.0

Web Pages Become Dynamic Apps

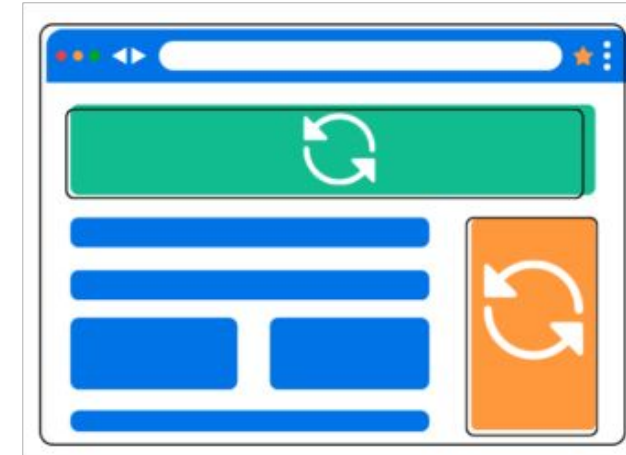


Powered by JavaScript and jQuery

Shift to Single Page Applications (SPA)

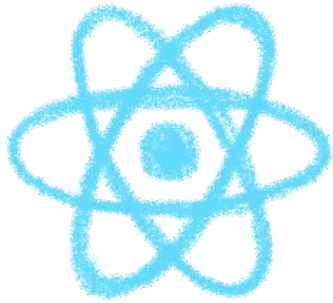


MPA
Multi-page app



SPA
Single-page app

Increasing Complexity



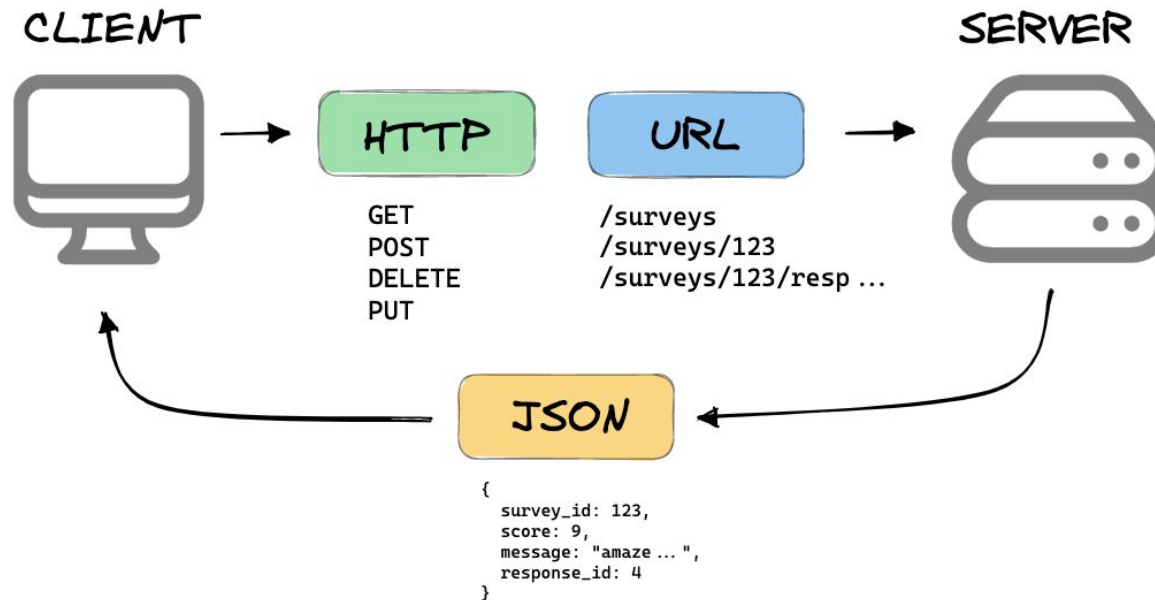
Lit



The rise of JavaScript frameworks

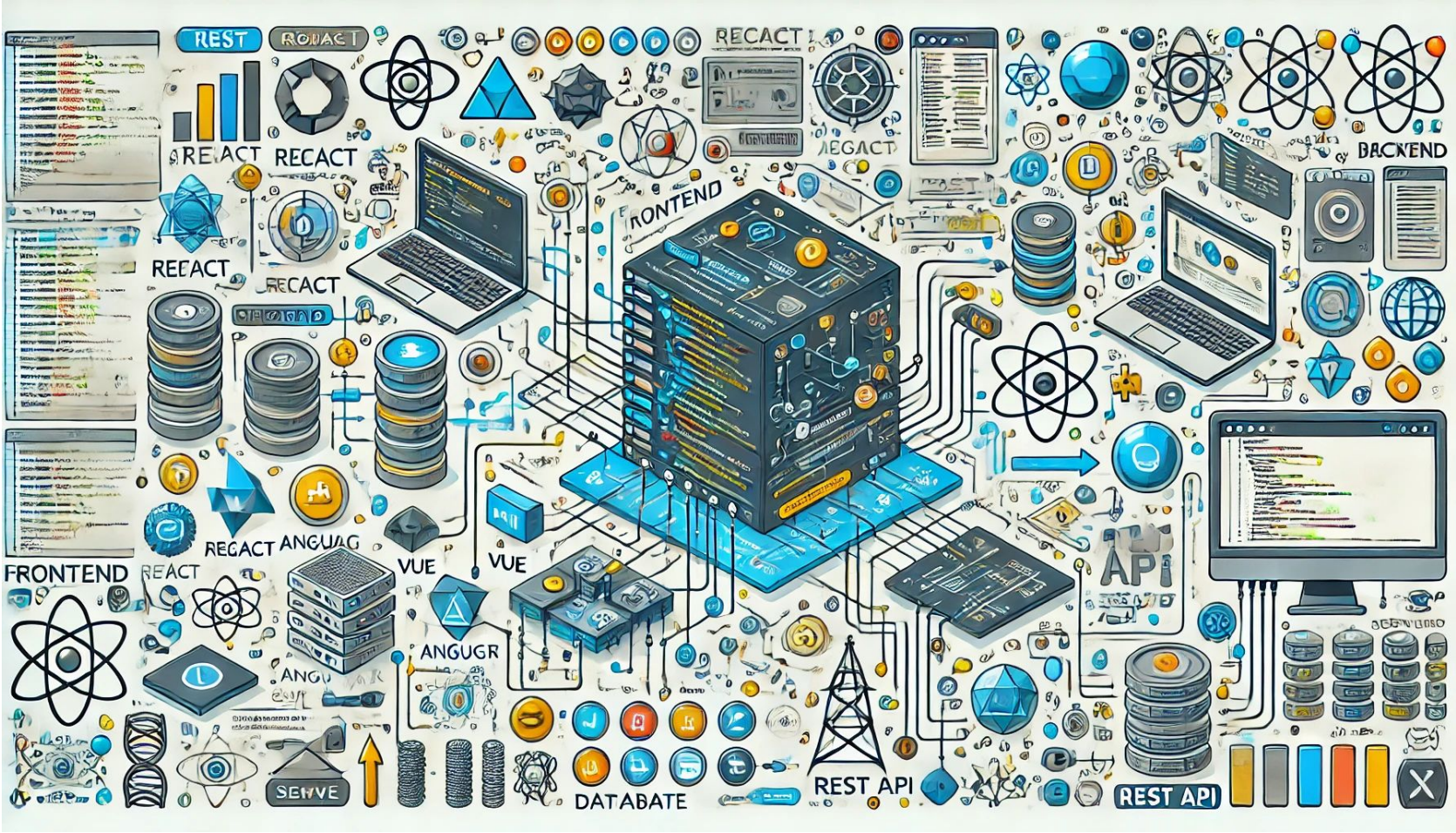
Backend Becomes a REST API

WHAT IS A REST API?



Serving JSON

We Gained Functionality



But lost simplicity and semantics

Overkill for Many Applications



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

</> htmx Might Be the Right Solution

</> htmx

It's extended HTML

- Simplicity
- Semantics
- Interactivity

" Modern Approach "



Take the data and render UI yourself 🤖

JSON



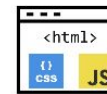
Web Application



User 1 Browser



Web Application



User 2 Browser



Web Application



User 3 Browser

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What you have against our CPUs and batteries? 🤖

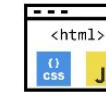
" HTMX Approach "



Let me help you guys 😊

HTML

Web Application



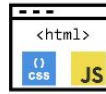
User 1 Browser

Web Application



User 2 Browser

Web Application



User 3 Browser

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Too much theory, show us a demo!

Examples, examples, examples!

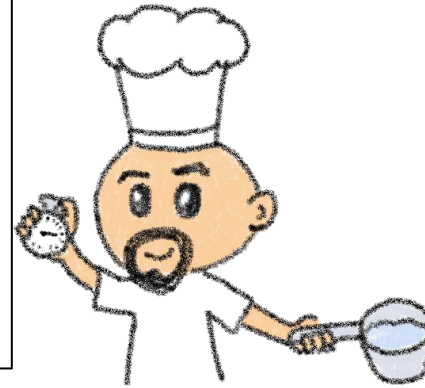
```
example-01.html
<script src="https://unpkg.com/htmx.org@2.0.2"></script>

<!-- 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>
```

</> htmx



Too much theory, show us a demo!

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This talk explores how **htmx 2.0** enhances HTML with seamless interactivity while **Web Components** (Lit) encapsulate logic and styling, providing a powerful yet lightweight alternative to heavy frontend frameworks.



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Above: Screenshot from the presentation.



<https://github.com/LostInBrittany/introduction-to-htmx-and-lit>

Sending POST on a button click

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

<script src="https://unpkg.com/htmx.org@2.0.4"></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/hmx.org@2.0.4"></script>  
  
<div hx-target="#status">  
  <button hx-get="/test-methods" inherit:target>Send GET</button>  
  <button hx-post="/test-methods" inherit:target>Send POST</button>  
  <button hx-put="/test-methods" inherit:target>Send PUT</button>  
  <button hx-delete="/test-methods" inherit:target>Send DELETE</button>  
</div>  
  
<div id="status">No request sent</div>
```

</> htmx

Using response to replace elements

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

<script src="https://unpkg.com/htmx.org@2.0.4"></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>
```

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Choosing when to send requests

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

<script src="https://unpkg.com/htmx.org@2.0.4"></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@2.0.4"></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>
```

</> htmx

A spinner to ease you wait

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

<script src="https://unpkg.com/htmx.org@2.0.4"></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>
```

</> htmx

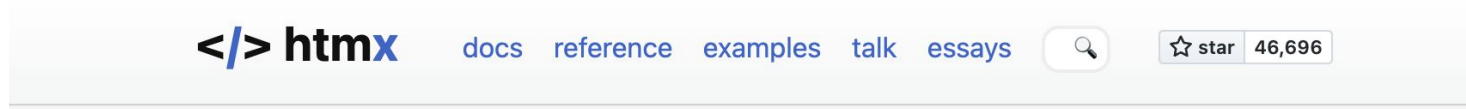
Boosting elements

```
./html-examples/html-example-07.html

<script src="https://unpkg.com/htmx.org@2.0.4"></script>

<nav hx-boost="true">
  <ul>
    <li><a href="./htmx-example-01.html">Example 01</a></li>
    <li><a href="./htmx-example-02.html">Example 02</a></li>
    <li><a href="./htmx-example-03.html">Example 03</a></li>
    <li><a href="/slow-request">Slow Request (Raw Text)</a></li>
  </ul>
</nav>
```

Extensions, extensions everywhere



Extensions

htmx supports extensions to augment the core hypermedia infrastructure it provides. The extension mechanism takes pressure off the core library to add new features, allowing it to focus on its main purpose of [generalizing hypermedia controls](#).

If you are interested in creating an extension for htmx, please see [Building htmx Extensions](#).

htmx extensions are split into two categories:

- [core extensions](#) - supported by the htmx team
- [community extensions](#) - supported by the broader community

Core Extensions

Name	Description
head-support	Provides support for merging head tag information (styles, etc.) in htmx requests

<https://htmx.org/extensions/>



Hypermedia Driven Applications (HDA)

An HDA:

- Uses declarative, HTML-embedded syntax rather than imperative scripting to achieve better front-end interactivity
- Interacts with the server in terms of hypermedia (i.e. HTML) rather than a non-hypermedia format (e.g. JSON)

`</> htmx`

Hyperview: a companion of htmx



///_hyperscript docs reference cookbook talk sponsor github Star

An easy & approachable language for modern web front-ends

Enhance HTML with concise DOM, event and async features. Make writing interactive HTML a joy.

```
on pointerdown
  repeat until event pointerup from the document
    set rand to Math.random() * 360
    transition
      *background-color
      to `hsl($rand 100% 90%)`
      over 250ms
    end
  transition *background-color to initial
```

TRY ME: PRESS AND HOLD

Install: `<script src="https://unpkg.com/hyperscript.org@0.9.14"></script>`

<https://hyperscript.org/>



There is even a book: Hypermedia Systems



HYPERMEDIA SYSTEMS

The revolutionary ideas that empowered the Web.

A simpler approach to building applications on the Web and beyond with [htmx](#) and [Hyperview](#).

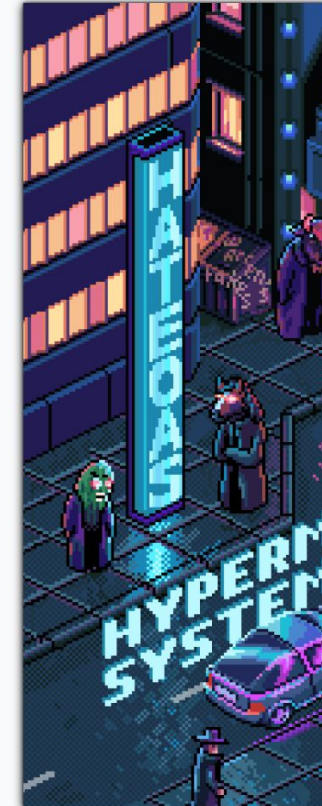
Enhancing web applications without using SPA frameworks.

[Hardcover](#) Buy from Amazon [Softcover](#) Buy from Lulu

[Read online](#) Free, forever [EPUB](#) Buy from Lulu

[Kindle](#) Buy from Amazon

For web developers frustrated with the complexity of modern practice, those looking to brush up on web fundamentals, web development shops looking to bring their apps to mobile, and any workaday programmer looking for an introduction to hypermedia and REST.



<https://hypermedia.systems/>

Time for More Code!

Let's see a complete example

To-do example

- Think about tasks

Too much theory, show us a demo!

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A Perfect Match for Frontend Development



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Let's do a to-do list

To-do example

- Think about tasks

From Hello World to a To-do List

What the heck are web component?

The 3 minutes context



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

Custom Element



To define your own HTML tag

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

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>
```

Hello, world!



こんにちは、影の世界!



Template



To have clonable document template

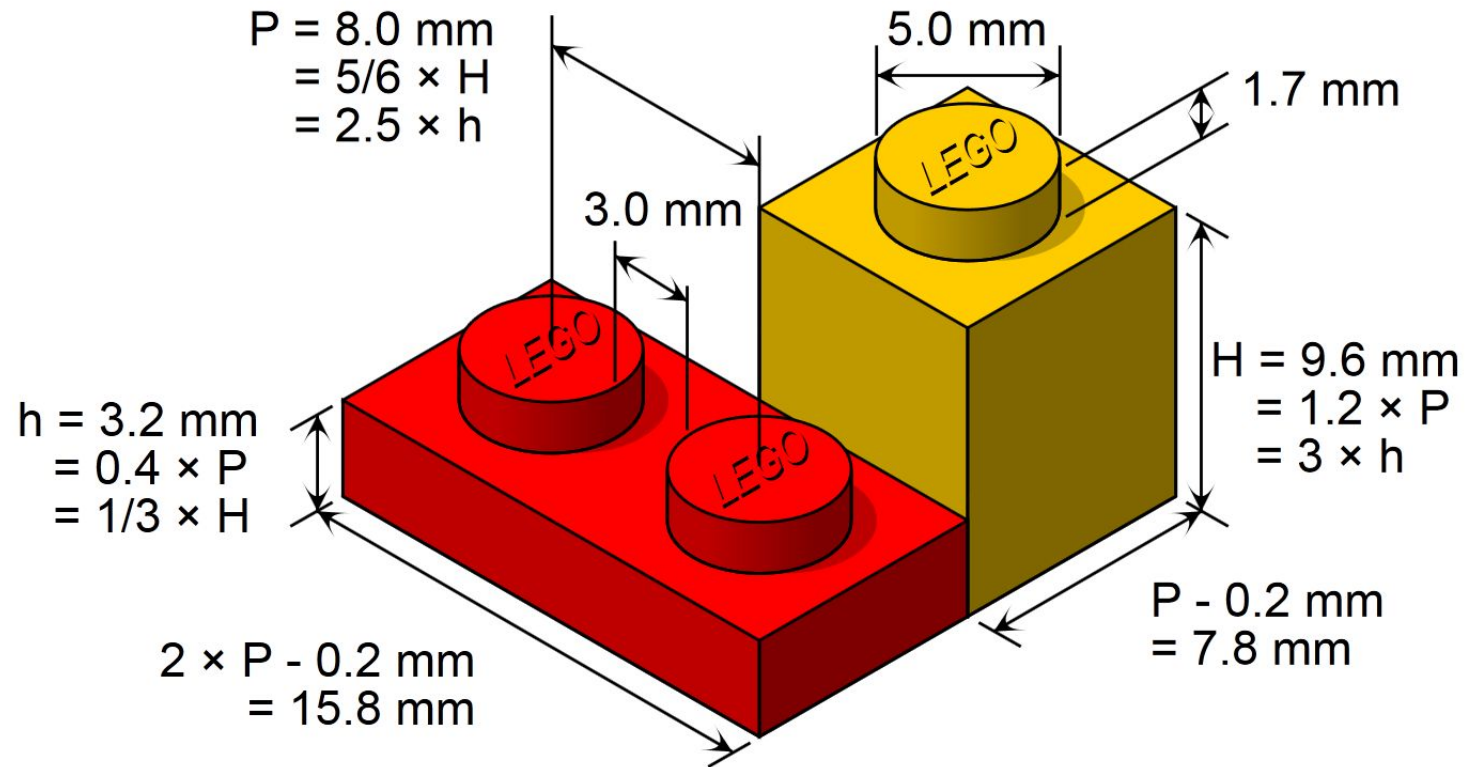
```
<template id="mytemplate">  
  <img src="" alt="great image">  
  <div class="comment"></div>  
</template>
```

```
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);
```



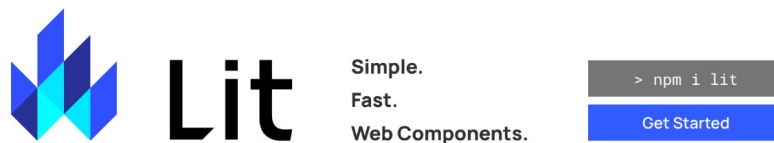
But in fact, it's just an element...

- Attributes
- Properties
- Methods
- Events





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

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For the new web paradigm

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

Based on lit-html



lit / packages / lit-html / README.md

abdonrd Unify the npm badges (#3680) d85f082 · 5 months ago History

Preview Code Blame 58 lines (36 loc) · 2.7 KB Raw Copy Download Edit

lit-html 2.0

Efficient, Expressive, Extensible HTML templates in JavaScript

Tests passing npm v2.7.5 discord join chat mentioned in awesome

lit-html is the template system that powers the [Lit](#) library for building fast web components. When using `lit-html` to develop web components, most users should import lit-html via the `lit` package rather than installing and importing from `lit-html` directly.

About this release

This is a stable release of `lit-html` 2.0 (part of the Lit 2.0 release). If upgrading from previous versions of `lit-html`, please note the minor breaking changes from lit-html 1.0 in the [Upgrade Guide](#).

An efficient, expressive, extensible
HTML templating library for JavaScript



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]!`)
```

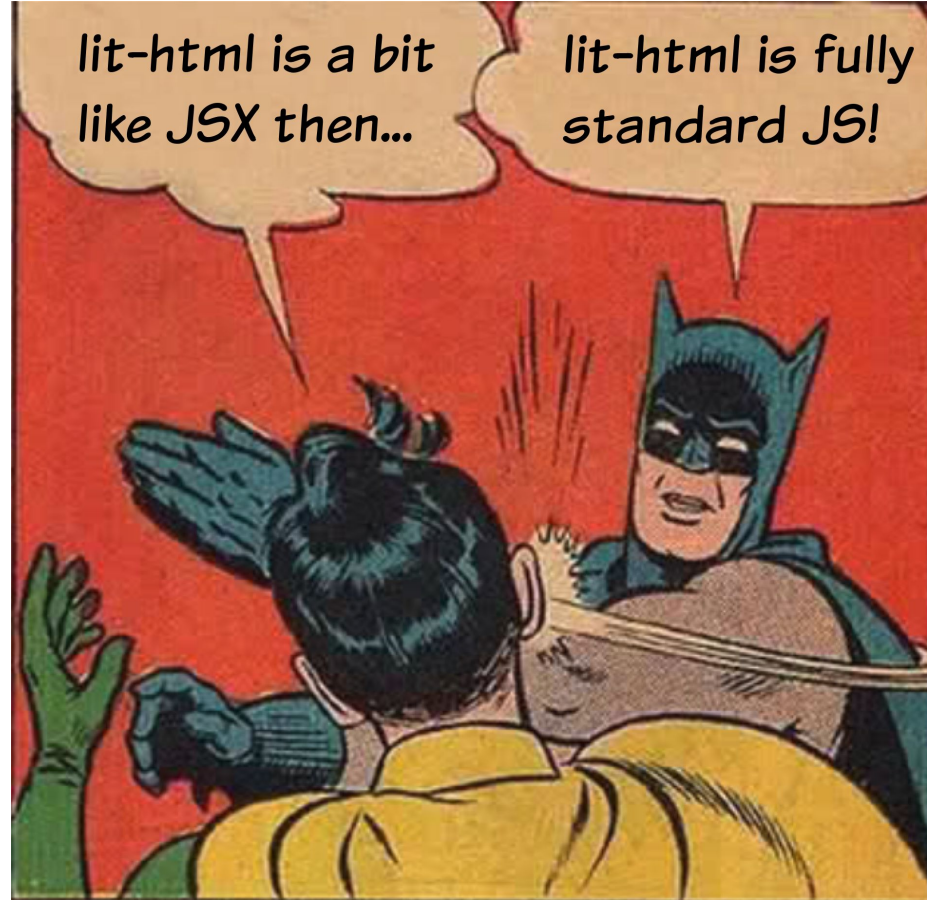
Little known functionality of template literals

lit-html Templates

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

Lazily rendered
Generates a TemplateResult

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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<https://github.com/LostInBrittany/introduction-to-htmx-and-lit>

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
customElements.define('custom-greeting', CustomGreeting);
```

Lightweight web-components using lit-html

My Lit Counter example



Let's do an interactive counter

Lit & `</>` htmx



Love at first `<tag>`



Lit

`</>` htmx

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!*

