

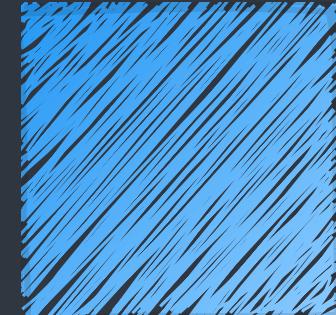
# Web Components:



Natif



StencilJS



LitElement





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## Igor Laborie

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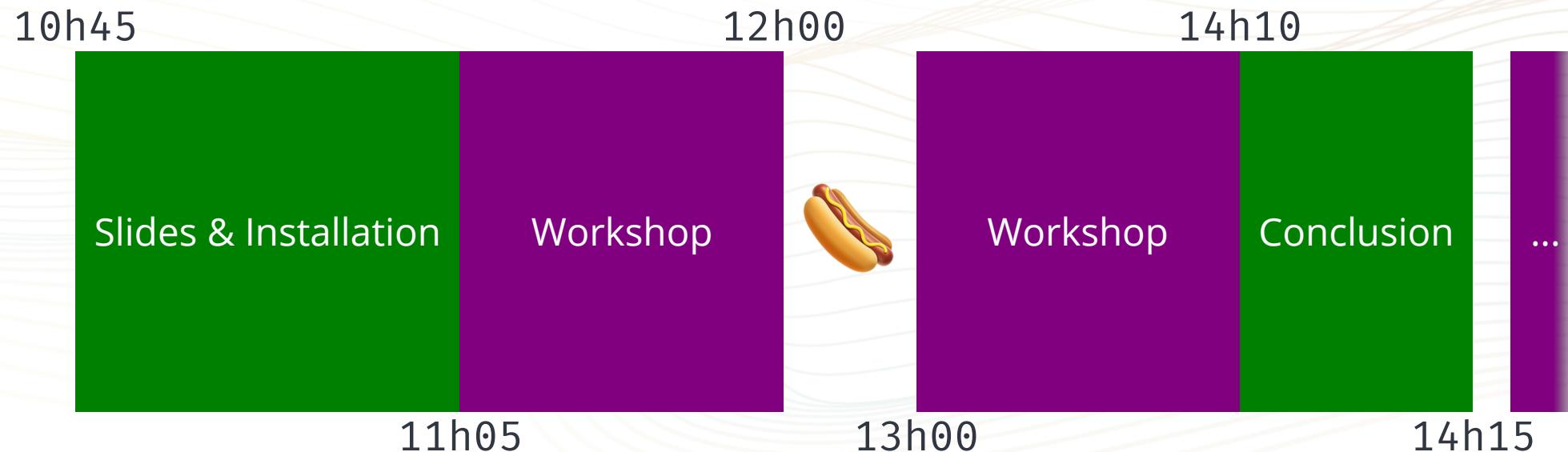
[igor@monkeypatch.io](mailto:igor@monkeypatch.io)

<<mailto:igor@monkeypatch.io>>





# Roadmap

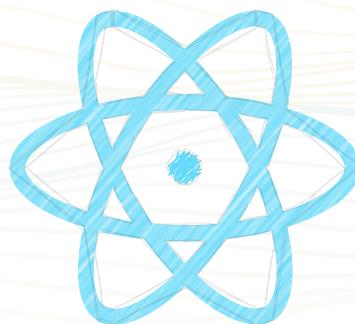


# Instructions

TODO: Installation instructions, Wifi

# Développons une application Web en 2019

# Commençons par choisir un Framework



React



Vue.js



Angular

# Puis comment allons-nous écrire le style

- CSS
- Sass/Scss
- Less
- Stylus
- CSS-in-JS
- PostCSS
- NextCSS
- ...

# Puis construisons notre application

- Webpack
- ParcelJs
- RollupJs
- Bazel

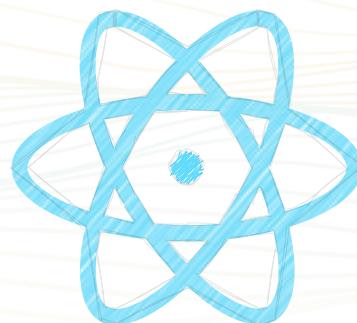


**Développer une application en JS n'est  
plus simple...**

# Ça va trop vite ...

A screenshot of a Twitter post. The profile picture is a small circular image of a person with short hair. The username is "I Am Devloper" and the handle is "@jamdevloper". The tweet text is: "I think I've had milk last longer than some JavaScript frameworks." Below the tweet are engagement metrics: 1,124 likes and 2:22 PM - Dec 4, 2014. To the right of the tweet is a blue Twitter icon. At the bottom of the card, there is a blue link that says "1,755 people are talking about this" followed by a right-pointing arrow.

# **...Interopérabilité ne vient plus gratuitement...**



React

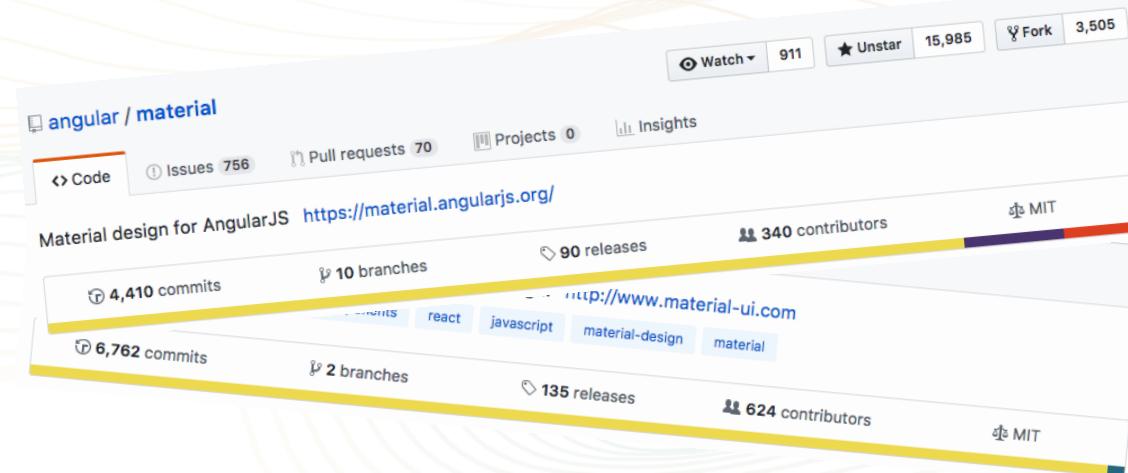


Vue.js



Angular

# ...et on réinvente sans arrêt la roue !





[material-components / material-components-web-components](#)

Watch 101 Star 786 Fork 137

Code Issues 75 Pull requests 28 Projects 1 Insights

Material Web Components - Material Design implemented as Web Components <https://material-components.github.io...>

290 commits 8 branches 13 releases 16 contributors Apache-2.0

Branch: master New pull request Create new file Upload files Find File Clone or download

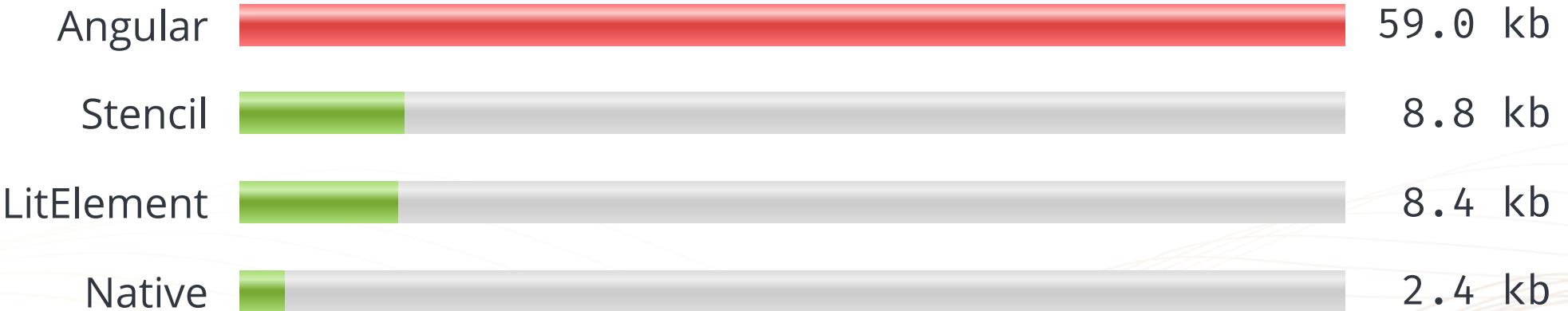
## Material Web Components

► <https://github.com/material-components/material-components-web-components> <<https://github.com/material-components/material-components-web-components>>

DO IT! DO IT! DO IT!

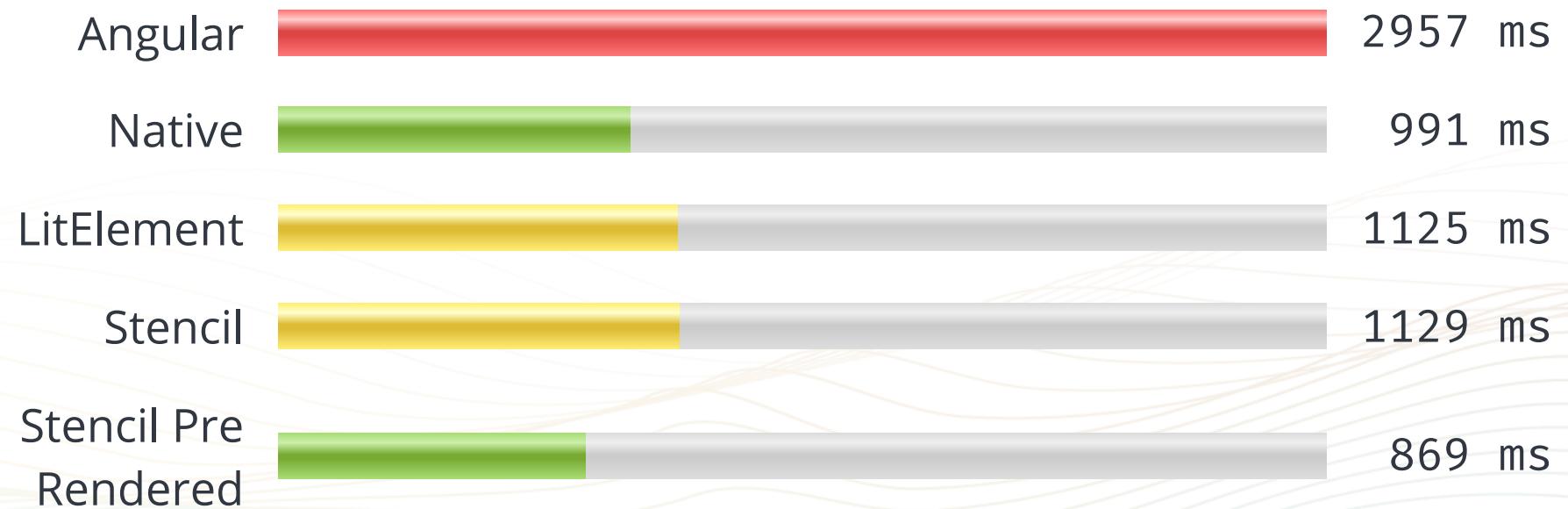


**Toute cette complexité doit  
s'arrêter avec les Web  
Components**



## Size matters (Gzipped)

- 😢 Stencil et litElement sont 5 fois plus petits qu'Angular
- 😱 Native est 23 fois plus petit qu'Angular



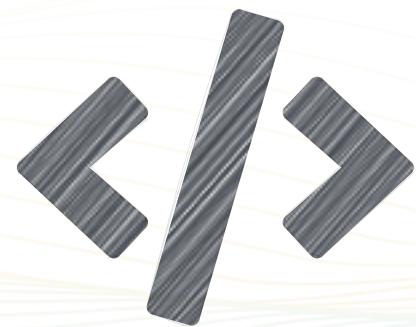
**Le temps ça compte (FMP 3G 📱 en ms)**

😢 Angular est 3 fois plus lent

# Web Components



Spécifier par le **World Wide Web Consortium** (W3C)  
Débuté en **2012**



Custom  
Elements



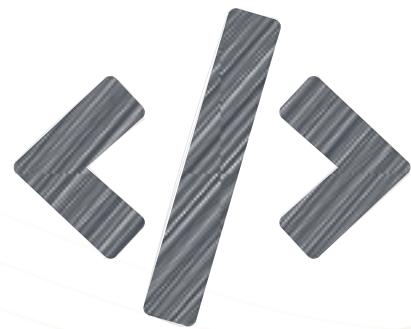
Shadow DOM



HTML templates



HTML Imports



Custom Elements

“Les *Custom Elements* sont la capacité de créer un balise HTML avec ses propres attributs et méthodes



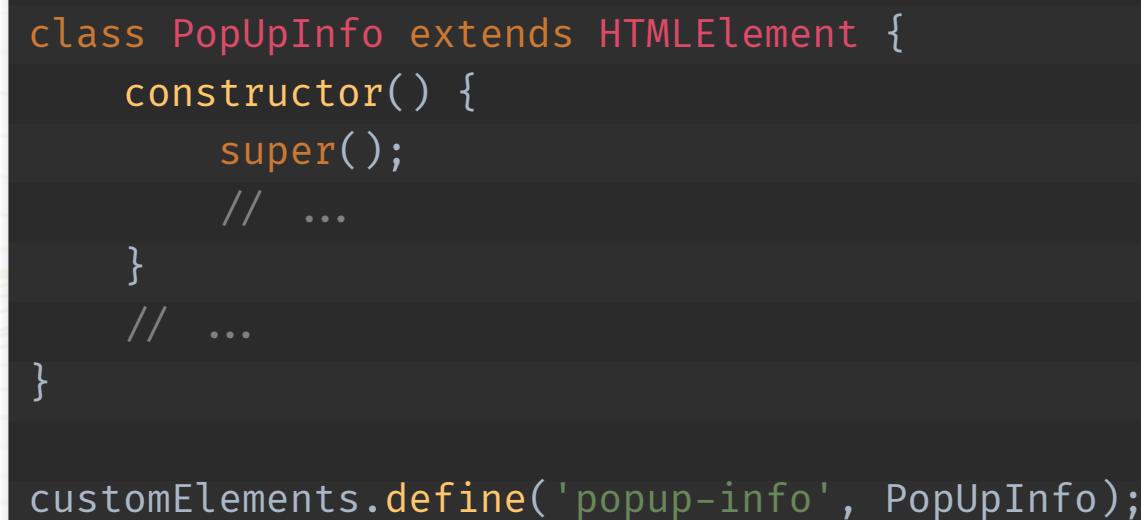
Shadow DOM

***“Le Shadow DOM fournit l'encapsulation du DOM et du CSS”***



HTML templates

**“Définit un bloc d'HTML réutilisable au moment de l'exécution”**



```
class PopUpInfo extends HTMLElement {
  constructor() {
    super();
    // ...
  }
  // ...
}

customElements.define('popup-info', PopUpInfo);
```

# Support des navigateurs



11



18



65



72



12

	IE	Edge	Firefox	Chrome	Safari
Custom Elements (V1)	😢	😢	😊	😊	😊
Shadow DOM (V1)	😢	😢	😊	😊	😊
HTML templates	😢	😊	😊	😊	😊

Supported

Partial Support

Not Supported

<https://caniuse.com> <<https://caniuse.com>>

# Support avec le polyfill



11+



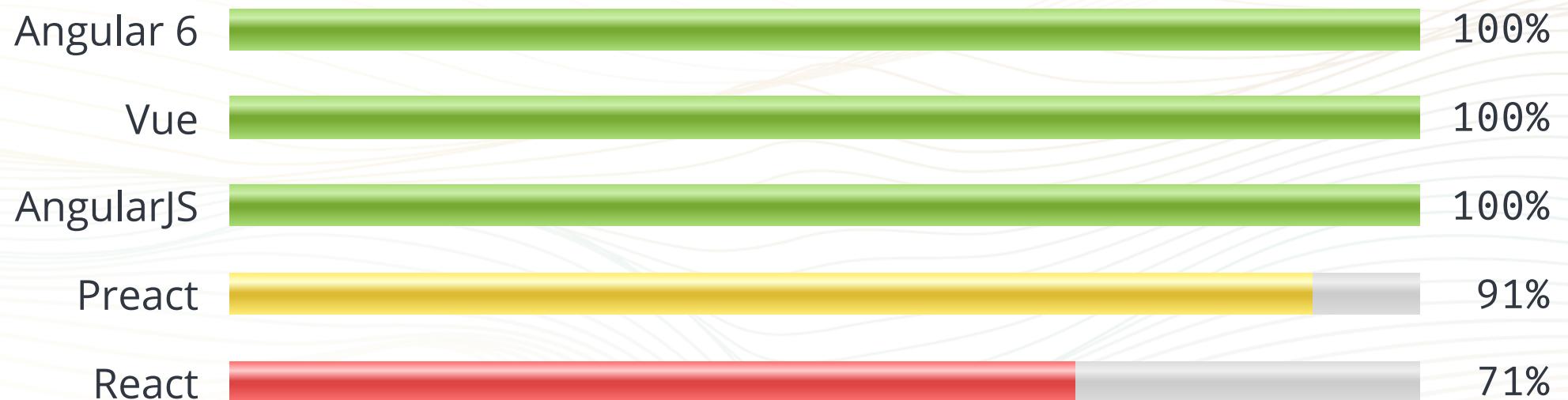
9+

	IE	Edge	Firefox	Chrome	Safari
Custom Elements (V1)	✓	✓	✓	✓	✓
Shadow DOM (V1)	✓	✓	✓	✓	✓
HTML templates	✓	✓	✓	✓	✓

<https://github.com/webcomponents/webcomponentsjs>

<<https://github.com/webcomponents/webcomponentsjs>>

# Interopérabilité des Web Component



<https://custom-elements-everywhere.com/> <<https://custom-elements-everywhere.com/>>

# StencilJS



<https://stenciljs.com/> <<https://stenciljs.com/>>



Projet **Open Source**, ➡ MIT License <[https://github.com/ionic-](https://github.com/ionic-team/stencil/blob/master/LICENSE)

team/stencil/blob/master/LICENSE>

Créé par l'équipe d'**Ionic** en 2017

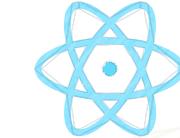
5.1k ⭐ sur github



**StencilJS n'est pas un autre  
framework**

**StencilJS c'est un compilateur qui  
génère des web components**

## StencilJS c'est un ensemble de bons outils

				
JSX / Virtual DOM	✗	✗	✓	✓
TypeScript	✗	✓	✗	✓
Decorators	✗	✓	✗	✓
Prerendering SSR	✗	✗	✗	✓

# **StencilJS** marche partout

Il charge les polyfills à la demande

La syntaxe de Stencil est concise

# Web component

```
1 class TodoItem extends HTMLElement {
2   constructor() {
3     super();
4     this._root = this.attachShadow({ 'mode': 'open' });
5     this._checked = false;
6     this._text = '';
7   }
8
9   connectedCallback() {
10   this._root.innerHTML =
11     `<style>` +
12     `</style>` +
13     `<li class="item">` +
14       `<input type="checkbox">` +
15       `<label>${this._text}</label>` +
16       `<button class="destroy">x</button>` +
17     `</li>`;
18
19   this._site = this._root.querySelector('.item');
20   this._removeButton = this._root.querySelector('.de');
21   this._text = this._root.querySelector('label');
22   this._checkbox = this._root.querySelector('input');
23   this._removeButton.addEventListener('click', (e) => {
24     e.preventDefault();
25     this.dispatchEvent(new CustomEvent('onRemove', {
26       detail: this._index
27     }));
28   });
29   this._checkbox.addEventListener('click', (e) => {
30     e.preventDefault();
31     this.dispatchEvent(new CustomEvent('onToggle', {
32       detail: this._index
33     }));
34   });
35   this._render();
36 }
37
38 disconnectedCallback() []
39 static get observedAttributes() {
40   return ['text'];
41 }
42 attributeChangedCallback(name, oldValue, newValue) {
43   if (name === 'text') {
44     this._text = newValue;
45   }
46   setIndex(value) {
47     this._index = value;
48   }
49   getIndex() {
50     return this._index;
51   }
52   set checked(value) {
53     this._checked = Boolean(value);
54   }
55   get checked() {
56     return this.hasAttribute('checked');
57   }
58   _render() {
59     if (!this._item) return;
60     this._text.textContent = this._text;
61     if (this._checked) {
62       this._item.classList.add('completed');
63       this._checkbox.setAttribute('checked', '');
64     } else {
65       this._item.classList.remove('completed');
66       this._checkbox.removeAttribute('checked');
67     }
68   }
69 }
70
71 window.customElements.define('todo-item', TodoItem);
```

# Polymer 2

```
1 <link rel="import" href="../../bower_components/polymer/polymer.html">
2
3 <dom-module id="todo-item">
4   <template>
5     <style>
6       </style>
7       <li class="item [&lt;!--{isCompleted(checked)}--]>">
8         <input type="checkbox" value="((checked))" checked="((checked))">
9         <label>{{text}}</label>
10        <button class="destroy" on-click="handleOnRemove">x</button>
11      </li>
12    </template>
13    <script>
14      class TodoItem extends Polymer.Element {
15        static get is() { return 'todo-item'; }
16        static get properties() {
17          return {
18            checked: { type: Boolean, value: false },
19            index: { type: Number, },
20            text: { type: String, value: '' }
21          };
22        }
23        handleOnRemove(e) {
24          this.dispatchEvent(new CustomEvent('remove', { detail: e }));
25        }
26        handleOnChecked(e) {
27          this.dispatchEvent(new CustomEvent('toggle', { detail: e }));
28        }
29        isCompleted(completed) {
30          return completed ? 'completed' : '';
31        }
32      }
33      window.customElements.define(TodoItem.is, TodoItem);
34    </script>
35  </dom-module>
```

# Angular Elements

```
1 import { Component, EventEmitter, Input, Output, ViewEncapsulation } from '@angular/core';
2
3 @Component({
4   selector: 'todo-item',
5   template: `
6     <li class="item" [class.completed]="checked">
7       <input type="checkbox" [checked]="checked" (change)="handleOnCheck($event)">
8       <label>{{text}}</label>
9       <button class="destroy" (click)="handleOnRemove($event)">x</button>
10    </li>
11  `,
12  styles: [
13    ''
14  ],
15  encapsulation: ViewEncapsulation.Native
16 })
17 export class TodoItem {
18   @Input() checked: boolean;
19   @Input() text: string;
20   @Input() index: number;
21   @Output() onTodoItemChecked = new EventEmitter<number>();
22   @Output() onTodoItemRemove = new EventEmitter<number>();
23 }
24
25 handleOnRemove = () => this.onTodoItemRemove.emit(this.index);
26 handleOnChecked = () => this.onTodoItemChecked.emit(this.index);
27
28 }
29 
```

# SkateJS + Preact

```
1 // @jsx h
2 import { props } from "skatejs/dist/esnext";
3 import { h } from "preact";
4 import { Component } from "util";
5
6 export default class extends Component {
7   static events = ["check", "remove"];
8   static props = {
9     checked: props.boolean,
10    index: props.number
11  };
12
13  handleCheck = e => {
14    this.onCheck({ index: this.index, value: e.target.checked });
15  };
16  handleRemove = () => {
17    this.onRemove({ index: this.index });
18  };
19
20  render({ checked, handleCheck, handleRemove }) {
21    return (
22      <div>
23        <div>
24          <style>`-
25            </style>
26            <li class="item">
27              <input type="checkbox" checked={checked} onChange={handleCheck}>
28              <label>{this.props.text}</label>
29              <button onClick={handleRemove}>x</button>
30            </li>
31          </div>
32        </div>
33      );
34    }
35  }
36 }
```

# StencilJS

```
import { Component, Prop, Event, EventEmitter } from '@stencil/core';

@Component({
  tag: 'todo-item',
  styleUrls: 'todo-item.scss',
  shadow: true,
})
export class TodoItem {
  @Prop() checked: boolean;
  @Prop() text: string;
  @Prop() index: number;
  @Event() onTodoItemChecked: EventEmitter;
  @Event() onTodoItemRemove: EventEmitter;

  handleOnRemove = () => this.onTodoItemRemove.emit(this.index);
  handleChecked = () => this.onTodoItemChecked.emit(this.index);

  render() {
    return (
      <li class={`${this.checked ? 'completed' : ''}`}>
        <input type="checkbox" checked=${this.checked} onChange={this.handleOnCheck.bind(this)} />
        <label>${this.text}</label>
        <button onClick={this.handleOnRemove}>x</button>
      </li>
    );
  }
}

SkateJS + lit-html

import { props } from "skatejs/dist/esnext";
import { html } from "lit-html/lib/lit-extended";
import { Component } from "./util";

export default class extends Component {
  static events = ["check", "remove"];
  static props = {
    checked: props.boolean,
    index: props.number
  };
  handleCheck = e => {
    this.onCheck({ index: this.index, value: e.target.checked });
  };
  handleRemove = () => {
    this.onRemove({ index: this.index });
  };
  render({ checked, handleCheck, handleRemove }) {
    return html`
```

# SkateJS + Preact

# SkateJS + lit-html

# Pour démarrer



```
$ npm init stencil
```



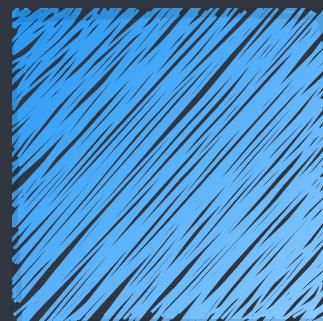
```
? Pick a starter > - Use arrow-keys. Return to submit.  
> ionic-pwa      Everything you need to build fast, production ready PWAs  
    app           Minimal starter for building a Stencil app or website  
    component     Collection of web components that can be used anywhere
```

```
import {Component, Prop} from '@stencil/core';

@Component({
  tag: 'my-first-component',
  styleUrl: 'my-first-component.scss'
})
export class MyComponent {
  // Indicate that name should be
  // a public property on the component
  @Prop() name: string;

  render() {
    // JSX
    return (<p>My name is {this.name}</p>);
  }
}
```

# Lit-Elements



<https://lit-element.polymer-project.org/> <[https://lit-](https://lit-element.polymer-project.org/)  
[element.polymer-project.org/](https://lit-element.polymer-project.org/)>



# Projet **Open Source**, ➔ BSD 3-Clause License

<<https://github.com/Polymer/lit-element/blob/master/LICENSE>>

Créer par l'équipe **Polymer Team** en 2017

1.8k  sur github

# Utilise la bibliothèque de template lit-html

<https://lit-html.polymer-project.org/> <<https://lit-html.polymer-project.org/>>

Basé sur les **templates HTML**

Avec les ➡ *Template literals* <[https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Template\\_literals](https://developer.mozilla.org/en-US/docs/Web/JavaScript/Reference/Template_literals)> de ES2015

```
import {html, render} from 'lit-html';

// A lit-html template uses
// the `html` template tag:
const sayHello = (name) =>
  html`<h1>Hello ${name}</h1>`;

// It's rendered with the `render()` function:
render(sayHello('World'), document.body);

// And re-renders only update the
// data that changed, without VDOM diffing!
render(sayHello('Everyone'), document.body);
```



```
import { LitElement, html, css } from 'https://unpkg.com/lit-element/lit-element';

class MyElement extends LitElement {
    static get properties() {
        return {
            mood: { type: String }
        }
    }
    static get styles() {
        return css` .mood { color: green; } `;
    }
    render() {
        return html` Web Components are
            <span class="mood">${this.mood}</span>! `;
    }
}

customElements.define('my-element', MyElement);
```

```
import { /* ... */ } from 'lit-element';

@customElement('my-element')
class MyElement extends LitElement {

    @property({ type: String }) mood;

    static get styles() {
        return css` .mood { color: green; } `;
    }

    render() {
        return html` Web Components are
            <span class="mood">${this.mood}</span>! `;
    }
}
```

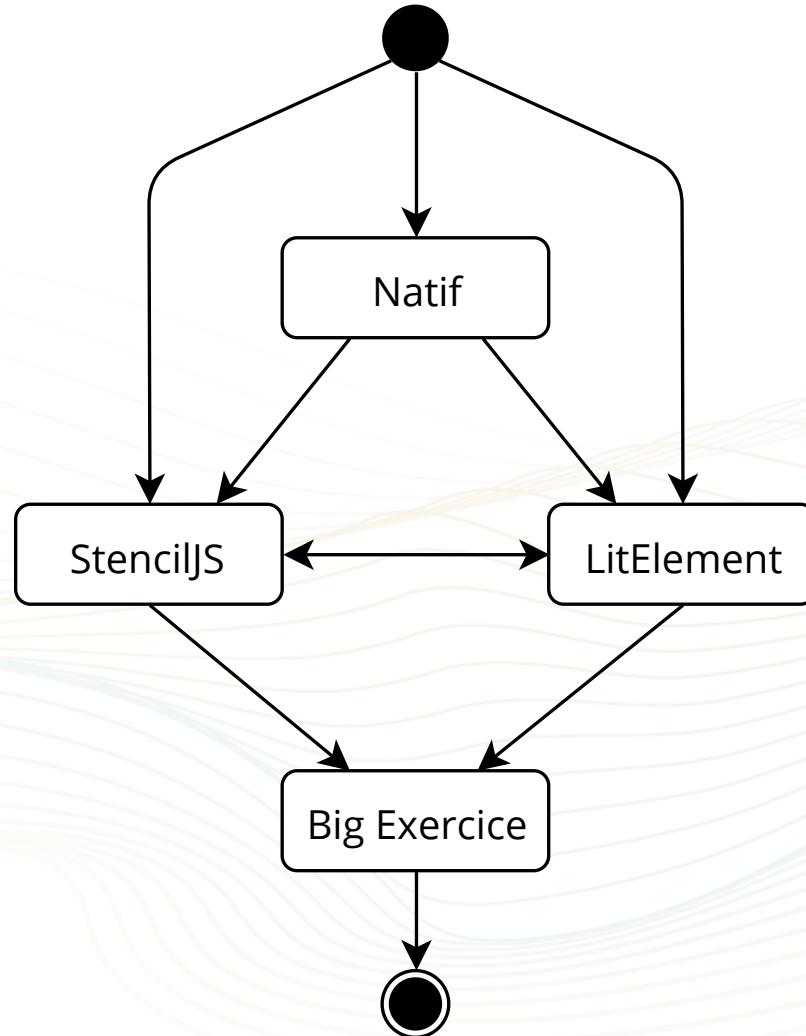
✓ Chrome, Safari, Opera, Firefox

 polyfills <<https://github.com/webcomponents/webcomponentsjs>> pour Edge et  
IE 11

# Workshop

@julienrenaux @ilaborie #DevoxxFR #webcomponents

DEVOXX  
France



# Conclusion

@julienrenaux @ilaborie #DevoxxFR #webcomponents

DEVOXX  
France

Construire une application

Style avec un thème

Support des navigateurs

Utiliser un gestionnaire d'état externe

Utilisez les *custom properties* CSS

Utiliser le polyfill ou Electron

TODO: ...

# Alternatives modernes

➤ SkateJS <<https://skatejs.netlify.com/>>

➤ Svelte <<https://svelte.technology>>

➤ Slim.js <<http://slimjs.com>>

...

# Fin

**Merci**

Pensez à nous faire des retours (votez !)