

FAKING WEB COMPONENTS

the importance of module based front-end



@jbmoelker



REAL WEB COMPONENTS



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WEB COMPONENTS

W3C Editor's Draft

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Custom Elements

W3C Editor's Draft 13 October 2016



This version:

<https://w3c.github.io/webcomponents/spec/custom/>

Latest published version:

<https://www.w3.org/TR/custom-elements/>

Latest editor's draft:

<https://w3c.github.io/webcomponents/spec/custom/>

Editor:

[Domenic Denicola, Google, Inc.](#)

Repository:

[We are on Github.](#)

[File a bug.](#)

[Commit history.](#)

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Implementation:

[Can I use Custom Elements?](#)

[Test Suite](#)

[Test Suite repository](#)

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Abstract

This specification describes the method for enabling the author to define and use new types of DOM elements in a document. It is a copy of the relevant parts of [HTML] up through commit `81ee034f316f4366ae-b315d16ea21521c83ab427` and [WHATWG-DOM] through commit `cb85ac4c35baa1345f2b71e2d-42d57b000dd40d1`. Section titles are prefixed with "HTML:" or "DOM:" to indicate which spec they copy from.



WEB COMPONENTS

```
<custom-element> ... </custom-element>
<link rel="import" href="some-file.html">
  <template id=""> ... </template>
  element.attachShadow( ... )
```

Web Components
are **focused, independent, reusable,**
small, composable UI modules



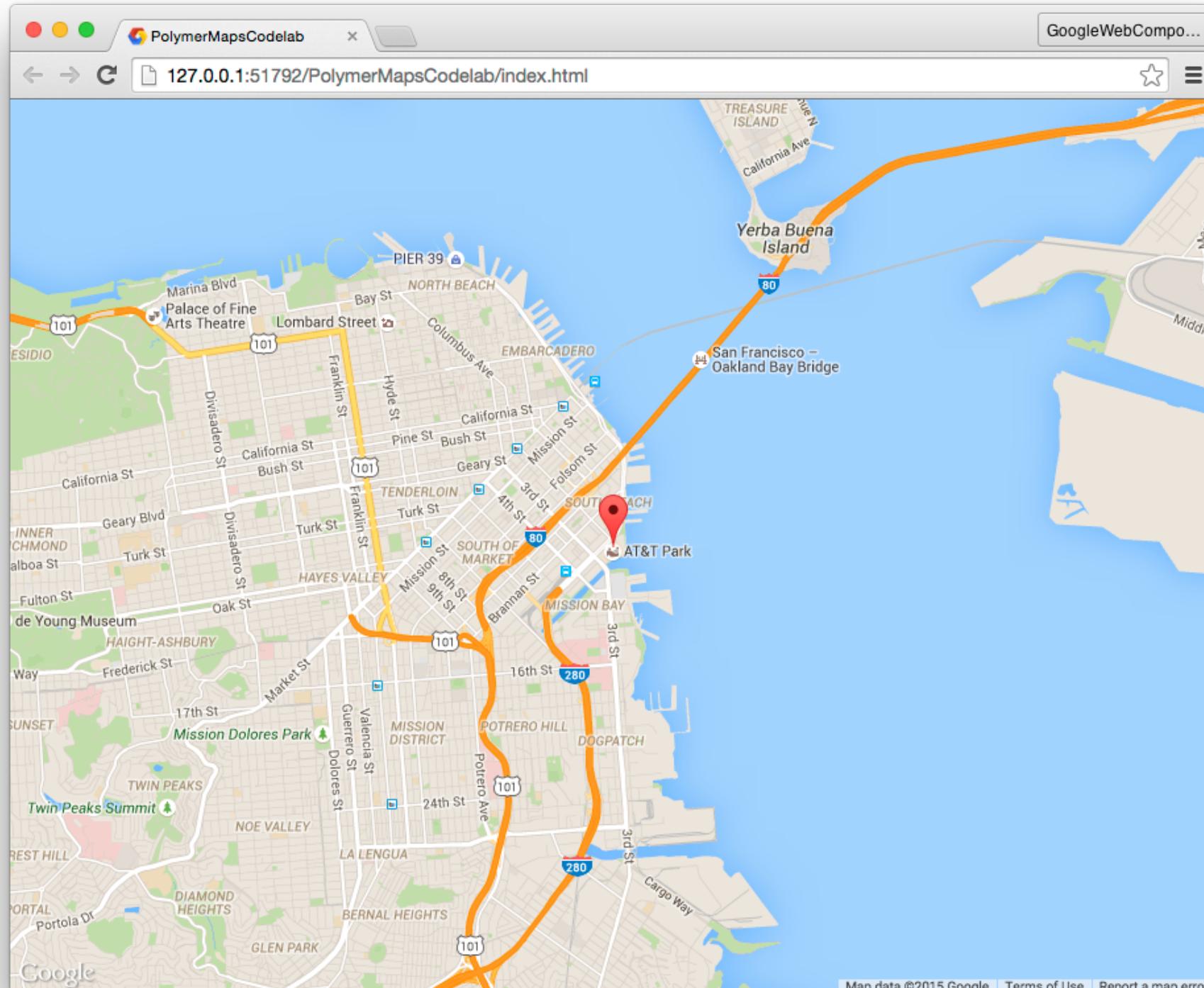
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ON THE SURFACE



<flip-clock></flip-clock>

ON THE SURFACE



<google-map>

```
latitude="37.779" longitude="-122.3892"  
zoom="13" api-key="YOUR_KEY">
```

<google-map-marker>

```
latitude="37.779" longitude="-122.3892"  
title="Go Giants!" draggable="true"  
></google-map-marker>
```

</google-map>

UNDER THE HOOD

I'M OUTSIDE THE ELEMENT (BIG/WHITE)

my-element: all CSS properties are reset to their initial value using `all: initial`.

Light DOM content is also affected.

I'M OUTSIDE THE ELEMENT (BIG/WHITE)

```
▼<div id="initialdemo">
  <p>I'm outside the element (big/white)</p>
  ▼<my-element>
    ►#shadow-root (open)
    "Light DOM content is also affected."
  </my-element>
  <p>I'm outside the element (big/white)</p>
</div>
```

```
#initialdemo {
  padding: ▶ 10px;
  background: ▶ ■ red;
  font-size: 25px;
  text-transform: uppercase;
  color: □ white;
}
```

```
:host {
  all: initial;
  display: block;
  background: □ white;
}
```



Custom Elements

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Most popular

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by [LostInBrittany](#)

A webcomponent to render a QR Code

★ 0 ⚡ 0

Sortable
by [RubaXa](#)

Sortable – is a JavaScript library for reorderable drag-and-drop lists on modern browsers and touch devices. No jQuery. ...

★ 8184 ⚡ 1196

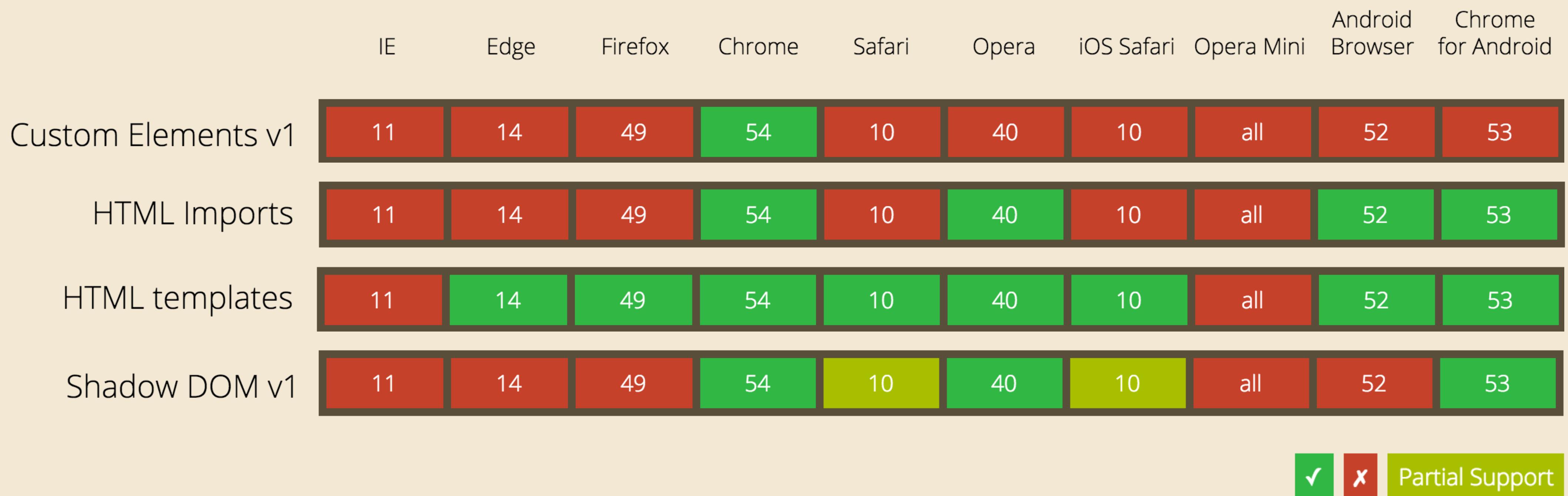
Sortable
by [RubaXa](#)

Sortable – is a JavaScript library for reorderable drag-and-drop lists on modern browsers and touch devices. No jQuery. ...

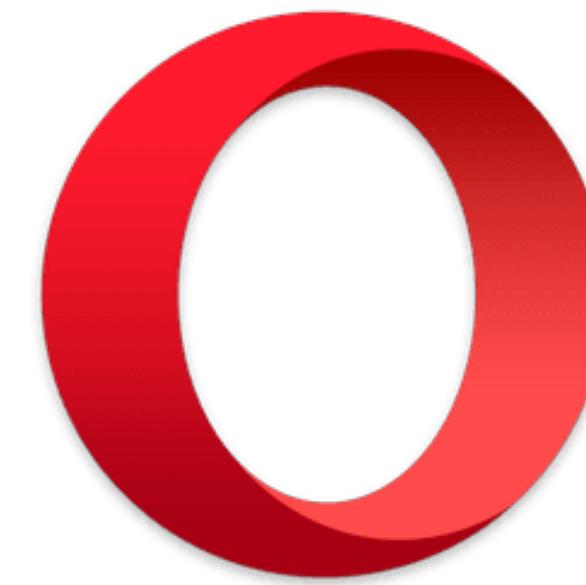
★ 8184 ⚡ 1196

[customelements.io](#)

BROWSER SUPPORT



BROWSERS



BROWSERS

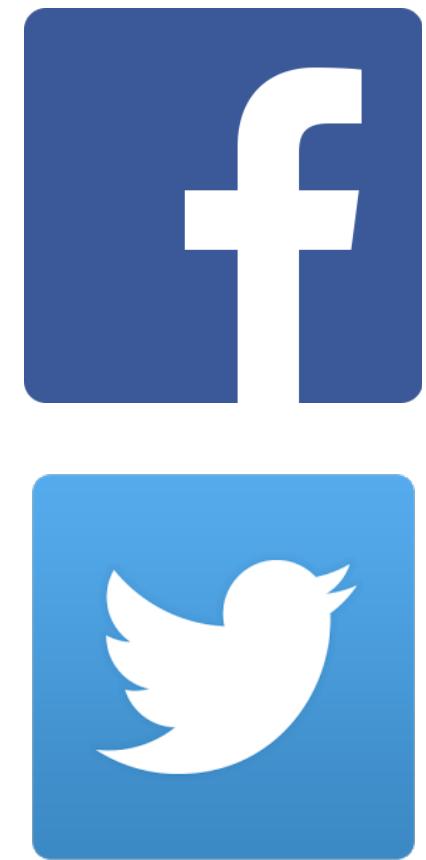
modern



oldies



in-app



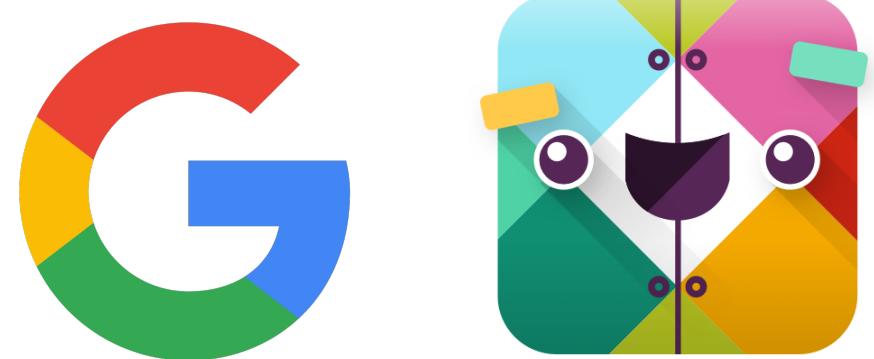
proxy



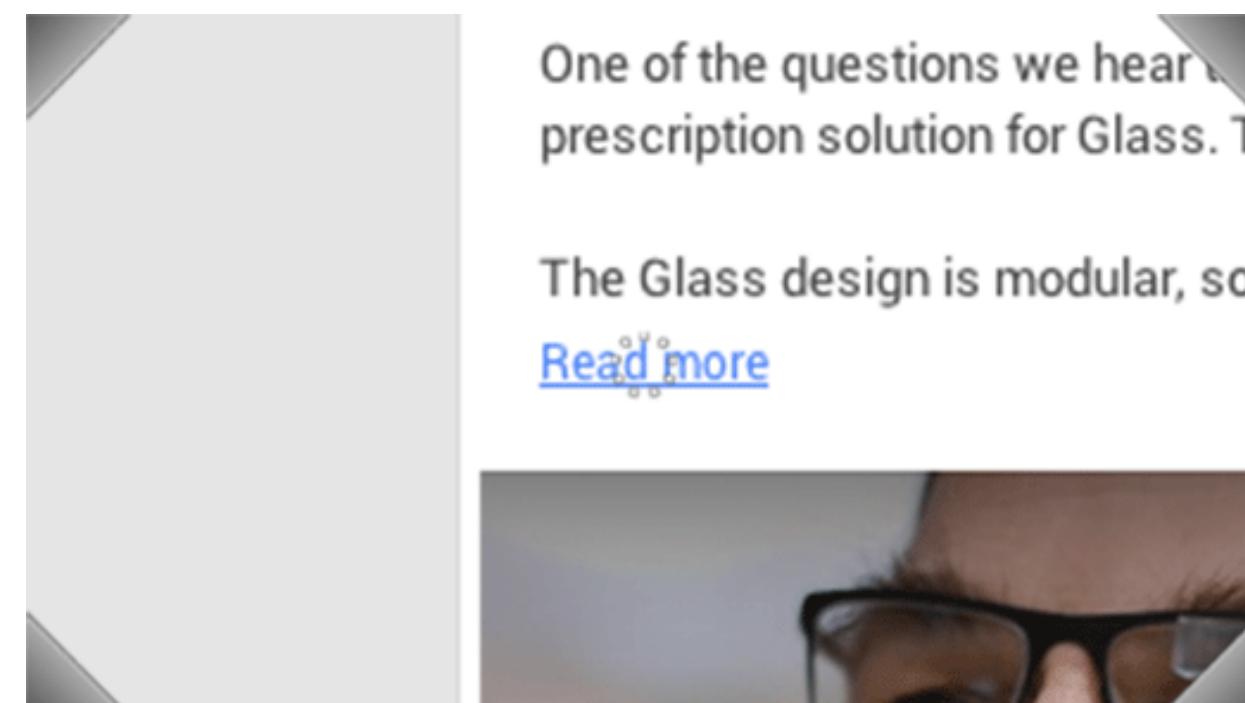
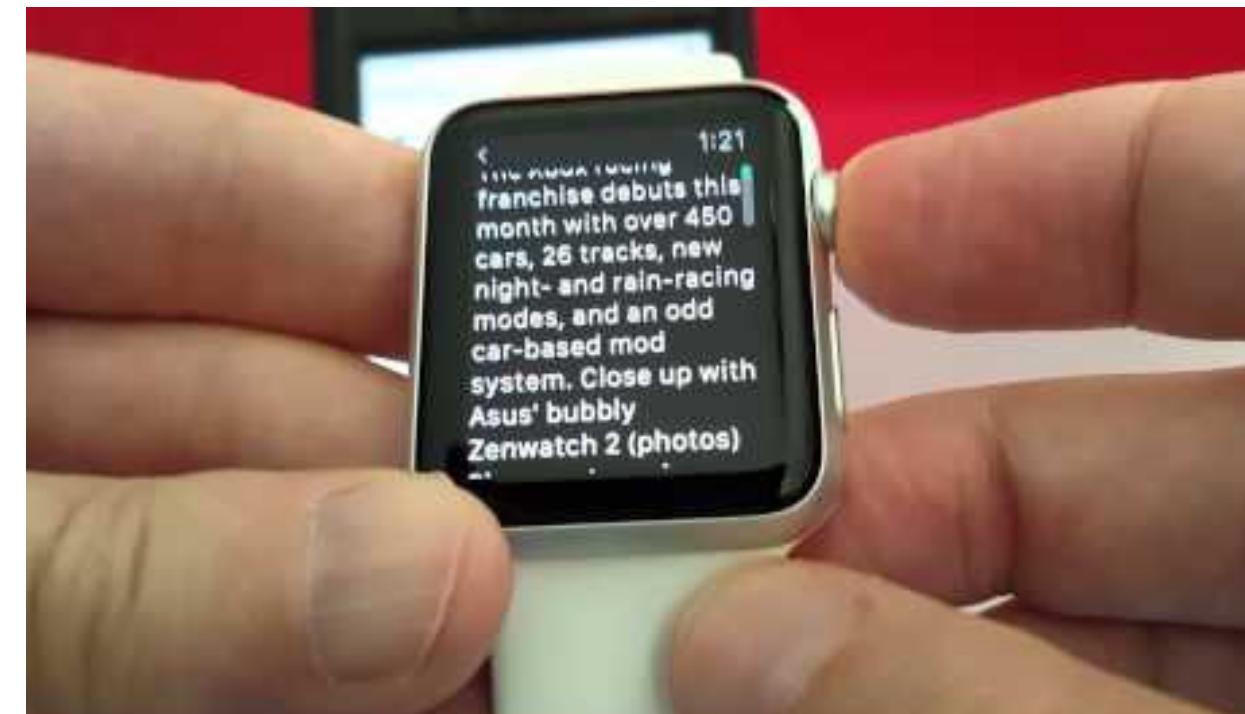
text only



robots



MORE BROWSERS



Web Components
is a standard with
improving browser support



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FAKING WEB COMPONENTS



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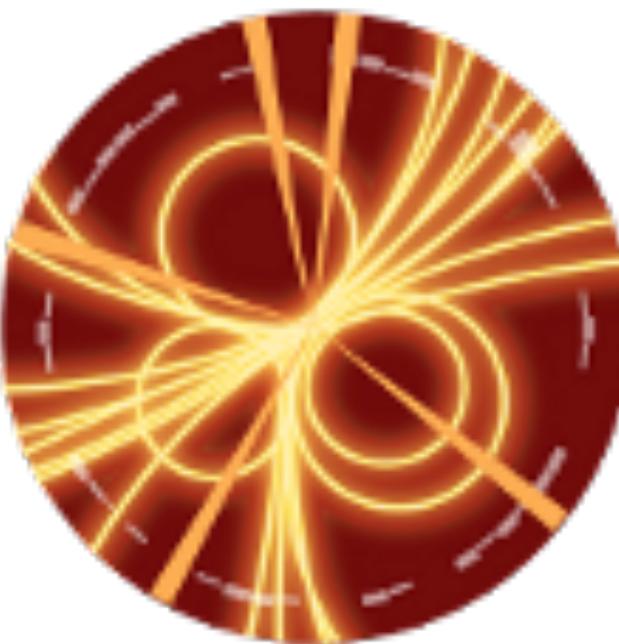
LIBRARIES



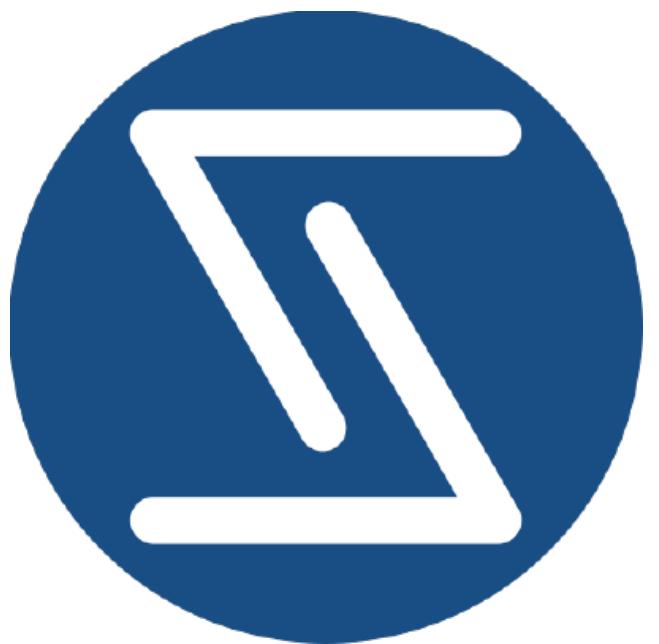
Polymer



X-Tag



Bosonic



Skate



purrfectcatbreeds.com



WEBCOMPONENTS.JS

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Tag: v0.7.22 [Find file](#) [Copy path](#)

 azakus release v0.7.22 50f9751 on Apr 15

2 contributors  

14 lines (14 sloc) | 116 KB [Raw](#) [Blame](#) [History](#)   

```
1  /**
2   * @license
3   * Copyright (c) 2014 The Polymer Project Authors. All rights reserved.
4   * This code may only be used under the BSD style license found at http://polymer.github.io/LICENSE.txt
5   * The complete set of authors may be found at http://polymer.github.io/AUTHORS.txt
6   * The complete set of contributors may be found at http://polymer.github.io/CONTRIBUTORS.txt
7   * Code distributed by Google as part of the polymer project is also
8   * subject to an additional IP rights grant found at http://polymer.github.io/PATENTS.txt
9   */
10 // @version 0.7.22
11 !function(){window.WebComponents=window.WebComponents||{flags:{}},var e="webcomponents.js",t=document.querySelector('script[src')
12 querySelector:function(t){var r=n(t),i=r!==t;t=r;var a,s=g(this),c=v(this).root;if(c instanceof e.wrappers.ShadowRoot)return o(
13 return j(n.apply(N(this),arguments))}function c(e,t){var n=document.implementation[t];e.prototype[t]=function(){return n.apply
14 if(l)for(var p,h=0;l>h&&(p=s[h]);h++)a(p)?(u.push(this),c++,n()):p.addEventListener("load",r),p.addEventListener("error",i));e
```

WEBCOMPONENTS.JS

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Code Issues 220 Pull requests 39 Projects 0 Wiki Pulse Graphs

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 azakus release v0.7.22 50f9751 on Apr 15

2 contributors  

116 KB

minified

14 lines (14 sloc) | 116 KB Raw Blame History Print Edit Delete

```
1  /**
2   * @license
3   * Copyright (c) 2014 The Polymer Project Authors. All rights reserved.
4   * This code may only be used under the BSD style license found at http://polymer.github.io/LICENSE.txt
5   * The complete set of authors may be found at http://polymer.github.io/AUTHORS.txt
6   * The complete set of contributors may be found at http://polymer.github.io/CONTRIBUTORS.txt
7   * Code distributed by Google as part of the polymer project is also
8   * subject to an additional IP rights grant found at http://polymer.github.io/PATENTS.txt
9   */
10 // @version 0.7.22
11 !function(){window.WebComponents=window.WebComponents||{flags:{}},var e="webcomponents.js",t=document.querySelector('script[src')
12 querySelector:function(t){var r=n(t),i=r!==t;t=r;var a,s=g(this),c=v(this).root;if(c instanceof e.wrappers.ShadowRoot)return o(
13 return j(n.apply(N(this),arguments))}function c(e,t){var n=document.implementation[t];e.prototype[t]=function(){return n.apply
14 if(l)for(var p,h=0;l>h&&(p=s[h]);h++)a(p)?(u.push(this),c++,n()):p.addEventListener("load",r),p.addEventListener("error",i));e
```

libraries and polyfills
improve browser support
but come at a **price**



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WEB COMPONENT LIKE



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COMPONENTS IN REACT



```
class Welcome extends React.Component {  
  render() {  
    return <h1>Hello, {this.props.name}</h1>;  
  }  
}
```

```
const element = <Welcome name="Sara" />;
```

```
ReactDOM.render(  
  element,  
  document.getElementById('root')  
,
```

COMPONENTS IN RIOT

RIOT

<todo>

```
<ul> <li each={ item in items }>{ item }</li> </ul>
<form onsubmit={ add }>
  <input id="newItem"> <button>Add</button>
</form>
```

```
<style scoped> li:before { content: "□"; } </style>
```

<script>

```
this.items = []
this.add = (e) => { this.items.push(this.newItem.value); this.newItem.value = '' }
</script>
```

</todo>

many new front-end
libraries and frameworks have
a **component-like setup**



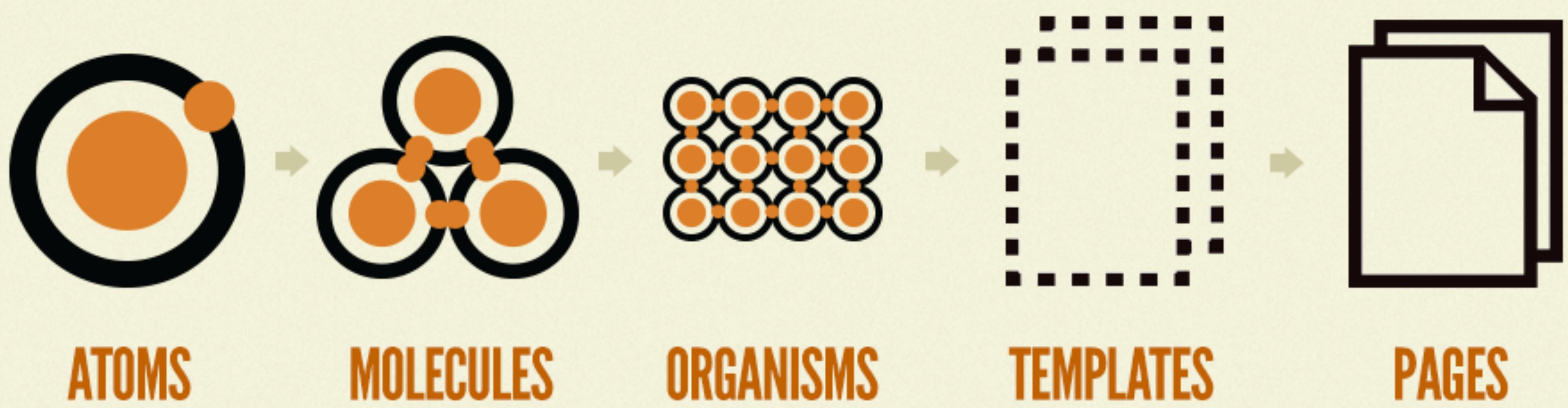
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THINK COMPONENTS

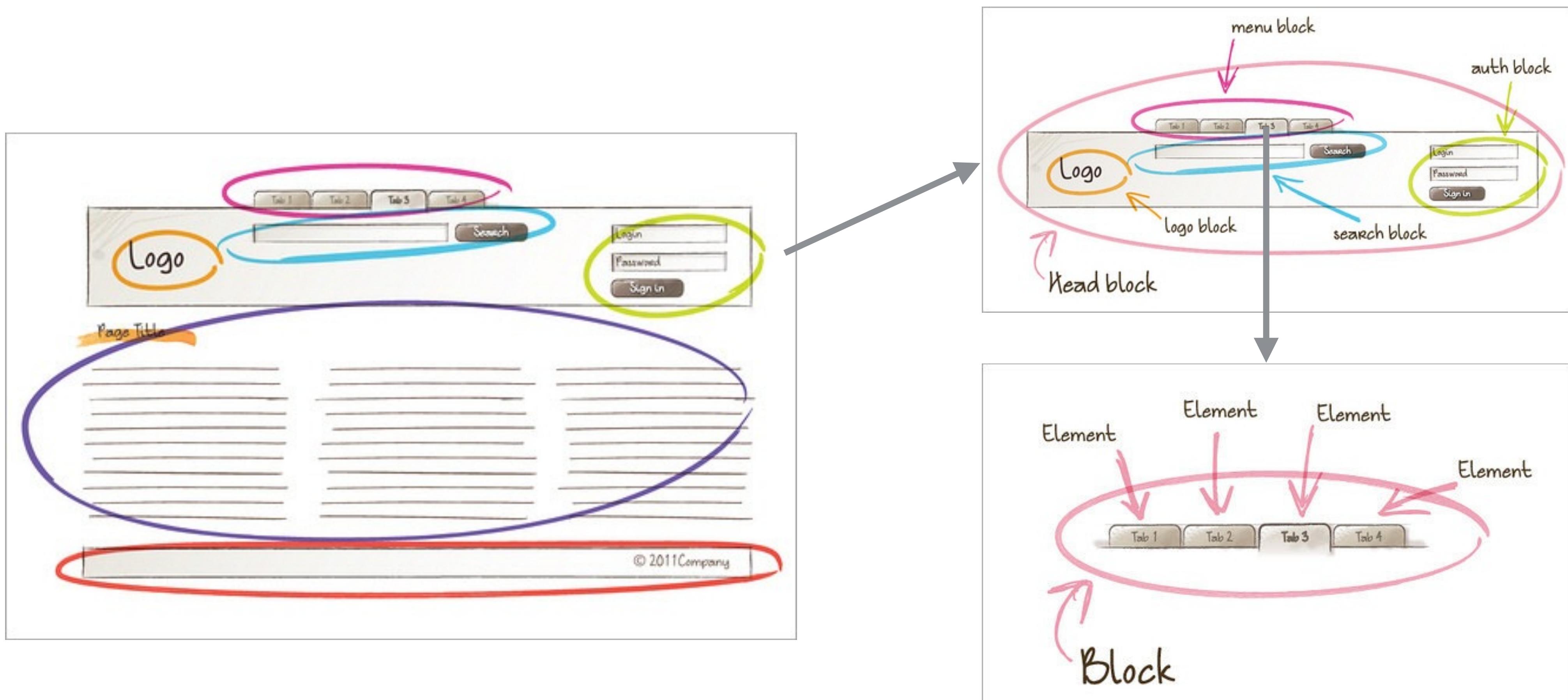


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ATOMIC WEB DESIGN



BLOCK-ELEMENT-MODIFIER



ORDER LIKE COMPONENTS



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ORDER BY ... ?!

app/

 index.html

 dashboard.html

 ...

stylesheet.css

script.js

tests.js

images/

 ...



ORDER BY TYPE

styles/

pie-chart.css

data-table.css

...

scripts/

pie-chart.js

data-table.js

....

tests/

pie-chart.js

data-table.js

....



pinterest.com/abbeyhdk/outfit-ideas

ORDER BY FEATURE

```
components/  
  pie-chart/  
    pie-chart.html  
    pie-chart.demo.html  
    pie-chart.css  
    pie-chart.js  
    pie-chart.test.js  
  assets/  
    README.md  
data-table/  
  data-table.html  
....
```

ORDER BY FEATURE

components/

pie-chart/

pie-chart.html

pie-chart.demo.html

pie-chart.css

pie-chart.js

pie-chart.test.js

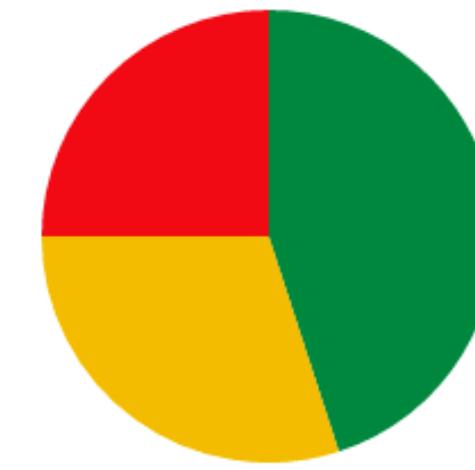
assets/

README.md

data-table/

data-table.html

....



Doelen

70% van de doelen gehaald

FROM COMPONENTS TO APPS



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heringinternational.com





heringinternational.com

JS DEPENDENCIES

```
// pie-chart.js
```

```
module.exports = function PieChart( ... ) { ... }
```

```
// dashboard.js
```

```
const PieChart = require('./pie-chart/pie-chart.js')
```

```
const DataTable = require('./data-table/data-table.js')
```

```
// app.js
```

```
require('./dashboard.js')
```

CSS DEPENDENCIES

```
// pie-chart.css  
.pie-chart { ... }
```

```
// dashboard.css  
@import "pie-chart/pie-chart.css";  
@import "data-table/data-table.css";
```

```
// app.css  
@import "dashboard.css";
```

OPTIMIZE OUTPUT

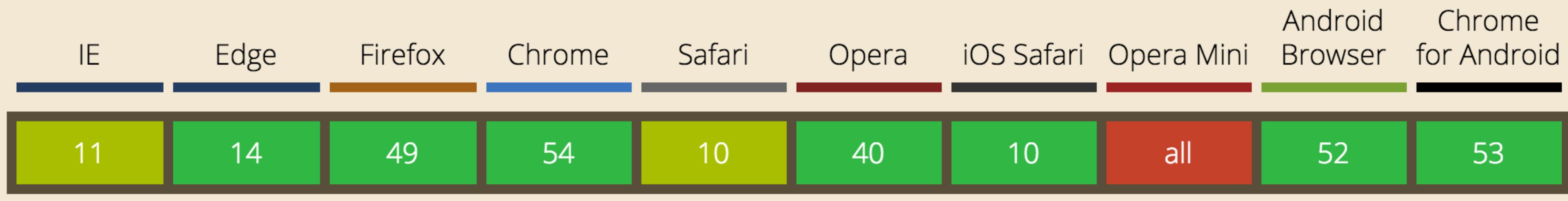


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FOR HTTP 1 OR 2?

HTTP/2 protocol

Networking protocol for low-latency transport of content over the web. Originally started out from the SPDY protocol, now standardized as HTTP version 2.



  Partial Support

Global: 71.18% + 6.26% = 77.44%

JS DEPENDENCIES

```
// pie-chart.js
```

```
module.exports = function PieChart( ... ) { ... }
```

```
// dashboard.js
```

```
const PieChart = require('./pie-chart/pie-chart.js')
```

```
const DataTable = require('./data-table/data-table.js')
```

```
// app.js
```

```
require('./dashboard.js')
```

BUNDLE JS

```
browserify({  
  entries: 'src/app.js',  
  debug: true // sourcemaps  
})  
.bundle()  
.transform('babelify', {presets: ['es2015']})  
.pipe(buffer())  
.pipe(sourcemaps.init({ loadMaps: true }))  
.pipe(uglify())  
.pipe(sourcemaps.write('./'))  
.pipe(saveFile('dist/app.js'));
```

CSS DEPENDENCIES

```
// pie-chart.css  
.pie-chart { ... }
```

```
// dashboard.css  
@import "pie-chart/pie-chart.css";  
@import "data-table/data-table.css";
```

```
// app.css  
@import "dashboard.css";
```

BUNDLE CSS

```
postcss([
  require('postcss-import'),
  require('postcss-css-variables'),
  require('autoprefixer'),
  require('cssnano')
])

.process(fs.readFileSync('src/app.css'), {
  from: 'src/app.css', to: 'dist/' map: { inline: false }
})
.then(result => saveFile('dist/app.css', result.css))
```



scribol.com/sports/cycling/shanghais-impossibly-overloaded-bikes/

VENDOR JS DEPENDENCIES

```
// dashboard.js
const throttle = require('lodash').throttle

const PieChart = require('./pie-chart/pie-chart.js')
const DataTable = require('./data-table/data-table.js')

// ... throttle data polling
```

VENDOR CSS DEPENDENCIES

```
// dashboard.css  
@import "path/to/bootstrap.css"; // to use tooltip styles  
  
@import "pie-chart/pie-chart.css";  
@import "data-table/data-table.css";
```



bullbearings.co.uk

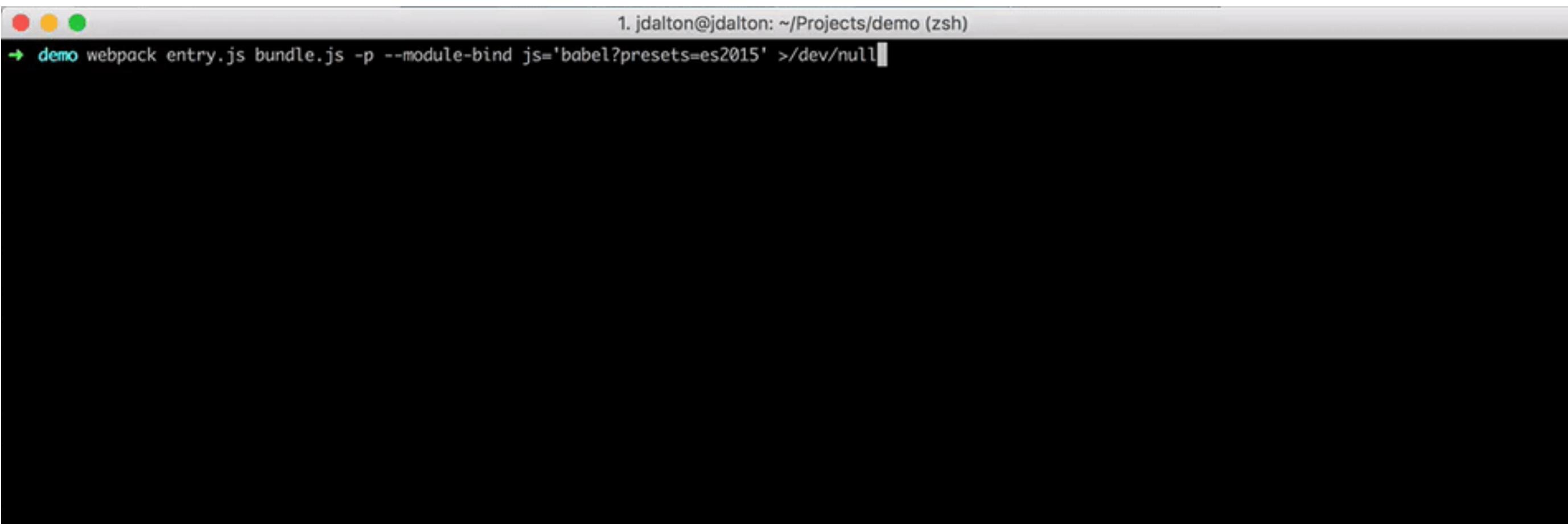


boss.blogs.nytimes.com

TREE SHAKING Lodash

```
browserify({
  entries: 'src/app.js',
  debug: true
})
.bundle()
.transform('babelify', {presets: ['es2015'], plugins: ['lodash'] })
.pipe(buffer())
.pipe(sourcemaps.init({ loadMaps: true }))
.pipe(uglify())
.pipe(sourcemaps.write('./'))
.pipe(saveFile('dist/app.js'));
```

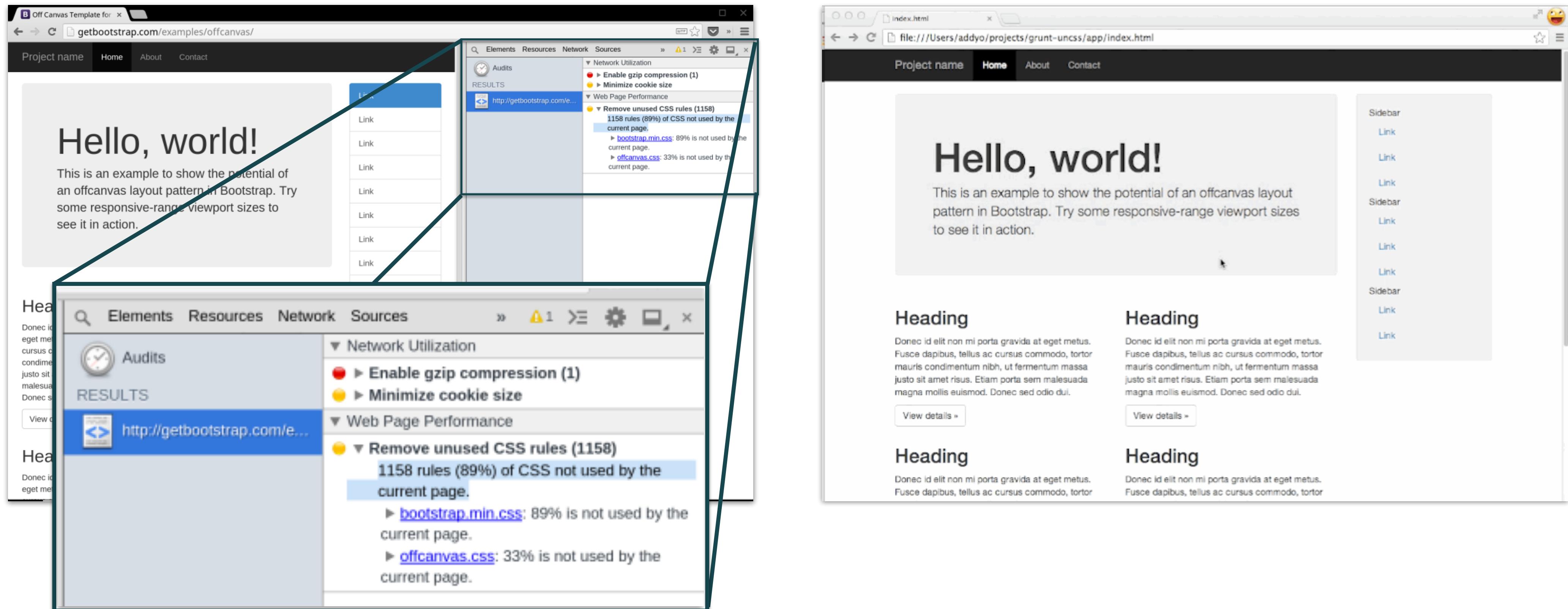
TREE SHAKING



```
1. jdalton@jdalton: ~/Projects/demo (zsh)
→ demo webpack entry.js bundle.js -p --module-bind js='babel?presets=es2015' >/dev/null
```



UNCSS



COMPONENT VIEWERS



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PATTERNLAB

ATOMS ▾ MOLECULES ▾ ORGANISMS ▾ TEMPLATES ▾ PAGES ▾ ALL

SIZE 986PX / 61.63EM S M L FULL RAND DISCO

Section Title

1:1
600x600

Lorem ipsum dolor sit (37 characters)

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Lorem ipsum dolor sit (37 characters)

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

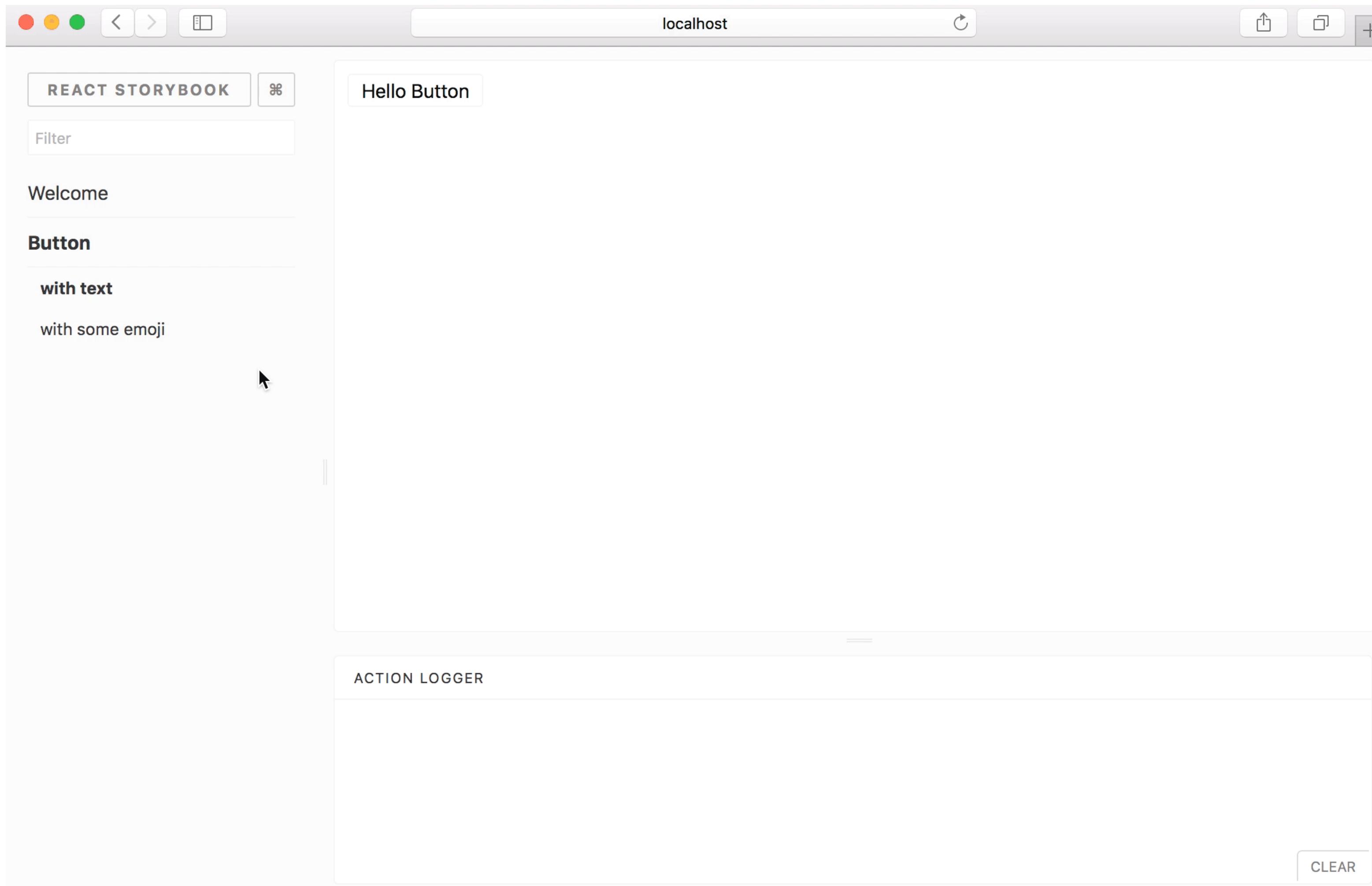
Lorem ipsum dolor sit (37 characters)

Lorem ipsum dolor sit amet, consectetur adipisicing elit, sed do eiusmod tempor incididunt ut labore et dolore magna aliqua. Ut enim ad minim veniam, quis nostrud exercitation ullamco laboris nisi ut aliquip ex ea commodo consequat.

Button ►

demo.patternlab.io

STORYBOOK



github.com/kadirahq/react-storybook

DEMO VIEWER: VARIATIONS

The screenshot shows a web-based application titled "Front-end Guide c-vis-front-end" running at 127.0.0.1:3000/#components/pie-chart. The interface includes a header with a logo, a title "pie-chart", and various navigation and settings icons. The main content area displays three distinct variations of pie charts:

- Demo: Chart with multiple segments**: A single green circle representing a full circle (100%).

Doelen
100% van de doelen gehaald
- Demo: Chart with multiple segments**: A pie chart divided into three segments: red, green, and yellow. The yellow segment is the largest.

Doelen
75% van de doelen gehaald
- Demo: Chart radius 40**: A pie chart with a radius of 40, divided into three segments: red, green, and yellow. The red segment is the largest.

Doelen
25% van de doelen gehaald

github.com/voorhoede/demo-viewer

DEMO VIEWER: INFO

The screenshot shows a web application interface titled "Front-end Guide c-vis-front-end" with the URL "127.0.0.1:3000/#components/pie-chart". The interface includes a toolbar with icons for back, forward, search, and other navigation functions, along with a zoom level selector (XL, FULL, 1, 4, 3, 6, px).

The main content area displays three separate sections, each containing a pie chart and text:

- Demo: Chart with multiple segments**: Shows a solid green pie chart. Below it, the text "Doelen" and "100% van de doelen gehaald" is displayed.
- Demo: Chart with multiple segments**: Shows a pie chart divided into three segments: red, yellow, and green. Below it, the text "Doelen" and "75% van de doelen gehaald" is displayed.
- Demo: Chart radius 40**: Shows a pie chart with a red segment and a green segment. Below it, the text "Doelen" and "25% van de doelen gehaald" is displayed.

DEMO VIEWER: REAL APPS

Screenshot of a real estate management application interface:

Header: Front-end Guide c-vis-front-en x | 127.0.0.1:3000/#views/portfolio

Top Bar:

- Portfolio
- Zoeken (Search)
- Rapporten (Reports)
- Laatst bezocht (Last visited)
- Hulp nodig? (Help needed?)
- Search bar: Zoek naar naam, straatnaam of V-code
- View modes: XL, FULL (selected), 1, 4, 3, 6, px

Left Sidebar:

- KENMERKEN (Filters):**
 - Leegstand: Verhuurd, Niet
 - Doel: Verhuurd, Behaald, Niet, Behaald
- EIGENAAR (Owner):**
 - Contactpersoon VPM: -
 - Contactpersoon TBR: -
- EIGENSCHAPPEN (Properties):**
 - Feitelijk gebruik: -
 - Categorie: -

Map View: A map of The Hague showing various neighborhoods like SEGBROEK, ROND DE ENERGIECENTRALE, CHINATOWN, THE HAGUE CENTER, SCHILDERSBUURT-NOORD, and Laak. The Stadsdeelkantoor Centrum/Stadhuis is marked in green. A legend indicates three types of locations: Residential (green), Commercial (yellow), and Industrial (orange).

Search Bar: Zoek naar naam, straatnaam of V-code

Filter Buttons: Alles (124), Objecten (124), VHE's (124), MIJN LIJST: Kies Lijst

KPI's (Key Performance Indicators):

Doelen	Leegstaand	Doelen
70% van de doelen gehaald	-25.000	70% van de doelen gehaald
70% van de doelen gehaald	25.000	70% van de doelen gehaald

Bottom Buttons: Selecteer alle, VERGELIJKEN, VOEG TOE AAN LIJST, Rapport genereren, PDF exporteren, Excel exporteren, Printen, Objecten per pagina (20), TITEL X, TITEL Y, TITEL Z.

Table View: A grid of property details.

	LOCATIE	NAAM OBJECT	ADRES	FEITELIJK GEBRUIK	BVO	DOEL	FINANCIEN	LEEGSTAND	PERSPECTIEF	TITEL X	TITEL Y	TITEL Z
<input type="checkbox"/> ★	Vooo8	Ateliers AB4 (2-4)	Abraham van Beyerstraat 2	Atelier	840	20% ●	-10.000 ●	2/10 ●	Continueren ●	-10.000 ●	2/10 ●	20% ●
★	Vooo81	Verdieping 1, woongedeelte - huur 330 p/m				●			●			
★	Vooo82	Verdieping 2, woongedeelte				●			●			

DEMO VIEWER: SELECTOR

Screenshot of the Front-end Guide c-vis-front-er application interface, showing the Selector view.

The interface includes the following components:

- Header:** Shows the title "Front-end Guide c-vis-front-er", the URL "127.0.0.1:3000/#views/portfolio", and a toolbar with icons for back, forward, search, and navigation (XL, FULL, 1 4 3 6 px).
- Top Bar:** Includes the "portfolio" logo, "Den Haag" text, "Zoeken" button, "Stadsdeelkantoor Centrum/Stadhuis" dropdown, "Rapporten", "Laatst bezocht", "Hulp nodig?", a search bar ("Zoek naar naam, straatnaam of V-code"), and a magnifying glass icon.
- Search Bar:** A global search bar at the top right with the placeholder "Zoek naar naam, straatnaam of V-code" and a magnifying glass icon.
- Filters:** A section titled "FILTERS" with a "wissen" button, containing filters for "KENMERKEN" (Leegstand, Doel), "EIGENAAR" (Contactpersoon VPM, Contactpersoon TBR), and "EIGENSCHAPPEN" (Feitelijk gebruik, Categorie).
- Map:** A map of The Hague showing various neighborhoods like SEGBROEK, ROND DE ENERGIECENTRALE, CHINATOWN, THE HAGUE CENTER, SCHILDERSBUURT-NOORD, De Haagse Hogeschool, and Laak. It highlights the "Stadsdeelkantoor centrum/stadhuis" location. The map includes street names, roads, and landmarks.
- KPI's:** A section displaying six pie charts under the heading "KPI'S". The charts represent "Doelen" (Goals) and "Leegstaand" (Empty spaces) across different categories.
- Table:** A table with columns: LOCATIE, NAAM OBJECT, ADRES, FEITELIJK GEBRUIK, BVO, DOEL, FINANCIEN, LEEGSTAND, PERSPECTIEF, TITEL X, TITEL Y, and TITEL Z. It lists three objects with their respective details.
- Bottom Buttons:** Buttons for "Selecteer alle", "VERGELIJKEN", "VOEG TOE AAN LIJST", "Rapport genereren", "PDF exporteren", "Excel exporteren", "Printen", and "Objecten per pagina" (set to 20).

DEMO VIEWER: LINKER

Screenshot of the 'Front-end Guide c-vis-front-er' browser window showing the 'portfolio' view.

The URL is 127.0.0.1:3000/#views/portfolio.

Header:

- Logo: Den Haag
- Page title: portfolio
- Search bar: Zoeken (Search), Stadsdeelkantoor Centrum/Stadhuis
- Navigation: Rapporten, Laatst bezocht, Hulp nodig?
- Search bar: Zoek naar naam, straatnaam of V-code
- View modes: XL, FULL, 1, 4, 3, 6, px

Left Sidebar (Filters):

- KENMERKEN**
 - Leegstand: Verhuurd, Niet Verhuurd
 - Doel: Behaald, Niet Behaald
- EIGENAAR**
 - Contactpersoon VPM: -
 - Contactpersoon TBR: -
- EIGENSCHAPPEN**
 - Feitelijk gebruik: -
 - Categorie: -

Map: A map of The Hague showing various neighborhoods like SEGBROEK, ROND DE ENERGIECENTRALE, CHINATOWN, THE HAGUE CENTER, SCHILDERSBUURT-NOORD, De Haagse Hogeschool, and Laak. The 'Stadsdeelkantoor centrum/stadhuis' is marked in green. A legend indicates that green dots represent 'Behaald' (Achieved) status.

KPI's (Key Performance Indicators):

Doelen	70% van de doelen gehaald
Leegstaand	-25.000
Doelen	70% van de doelen gehaald
Leegstaand	25.000
Doelen	70% van de doelen gehaald

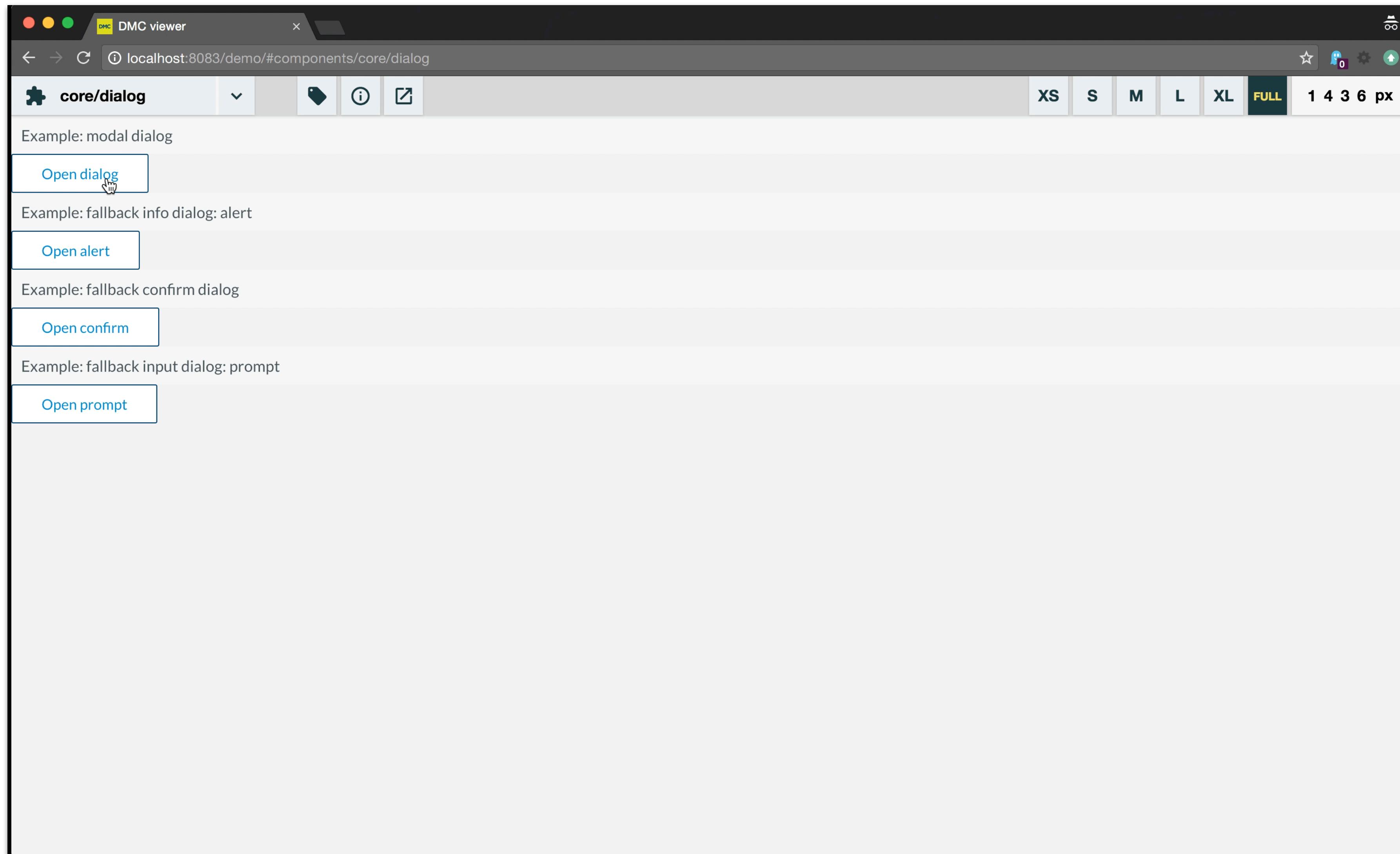
Bottom Buttons:

- Selecteer alle
- VERGELIJKEN
- VOEG TOE AAN LIJST
- Rapport genereren
- PDF exporteren
- Excel exporteren
- Printen
- Objecten per pagina: 20

Table: A grid showing object details.

	LOCATIE	NAAM OBJECT	ADRES	FEITELIJK GEBRUIK	BVO	DOEL	FINANCIEN	LEEGSTAND	PERSPECTIEF	TITEL X	TITEL Y	TITEL Z
<input type="checkbox"/> ★	Vooo8	Ateliers AB4 (2-4)	Abraham van Beyerenstraat 2	Atelier	840	20% ●	-10.000 ●	2/10 ●	Continueren ●	-10.000 ●	2/10 ●	20% ●
★	Vooo81	Verdieping 1, woongedeelte - huur 330 p/m				●			●			
★	Vooo82	Verdieping 2, woongedelte				●			●			

DEMO VIEWER: RESIZER



IN SUMMARY



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componetize your front-end

use explicit **dependencies**

let tools **optimise** output



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THANK YOU!



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questions?



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