

The Data-Driven Web of Now

Extending D3js



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The data-driven web

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Phones from Sprint



Samsung Galaxy S5, Black 16GB (Sprint)
★★★★☆ (183)
\$99.99 - \$649.99



HTC One M8 Harman/Kardon Edition...
★★★★☆ (43)
\$99.99 - \$679.99



LG G2, Black 32GB (Sprint)
★★★★★ (153)
\$0.01 - \$499.99



Kyocera Hydro Vibe, Charcoal Gray 8GB
★★★★☆ (9)
\$0.01 - \$149.99



Samsung Galaxy Note 3, Black 32GB
★★★★★ (247)
\$99.99 - \$599.99



BlackBerry Q10, Black 16GB (Sprint)
★★★★★ (35)
\$29.99 - \$529.99

Phones from AT&T



LG G3, Metallic Black 32GB (AT&T)
★★★★★ (66)
\$0.00 - \$579.99



Samsung Galaxy S5, White 16GB (AT&T)
★★★★☆ (61)
\$0.00 - \$649.99



HTC One M8, Gunmetal Grey 32GB (AT&T)
★★★★★ (56)
\$0.00 - \$669.99



Samsung Galaxy Note 3, Black 32GB (AT&T)
★★★★☆ (128)
\$0.00 - \$664.99



Samsung Galaxy S5 Active, Titanium...
★★★★☆ (30)
\$0.00 - \$659.99



Samsung Galaxy S5, Black 16GB (AT&T)
★★★★☆ (83)
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Nike is killing it. Online sales jump 70%

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U.S. Stocks »

Gainers			Losers		
	Price	% Change		Price	% Change
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AN AutoNation Inc	49.98	+0.66%	AAPL Apple Inc	97.87	-3.81%
HCP HCP Inc	39.72	+0.63%	BIIB Biogen Idec Inc	333.40	-3.73%
VTR Ventas Inc	61.43	+0.47%	AVP Avon Products Inc	12.88	-3.52%
FE FirstEnergy Corp	33.87	+0.36%	TDC Teradata Corp	41.76	-3.38%

Data as of 4:00pm ET

World Markets »

Level	% Change	Currencies »	Price	\$ Change
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What emotions are driving the



Quick demo time

**the entire web is
data driven**

why do you care?

templates

mustache template

```
<h1>{{header}}</h1>
{{#bug}}
{{/bug}}

{{#items}}
  {{#first}}
    <li><strong>{{name}}</strong></li>
  {{/first}}
  {{#link}}
    <li><a href="{{url}}">{{name}}</a></li>
  {{/link}}
{{/items}}

{{#empty}}
  <p>The list is empty.</p>
{{/empty}}
```


react template

```
    },  
    componentDidMount: function() {  
      this.interval = setInterval(this.tick, 1000);  
    },  
    componentWillUnmount: function() {  
      clearInterval(this.interval);  
    },  
    render: function() {  
      return (  
        <div>Seconds Elapsed: {this.state.secondsElapsed}</div>  
      );  
    }  
  });
```

```
React.renderComponent(<Timer />, mountNode);
```


underscore

```
Post by <%= post.get('author') %>
```

underscore

```
<% if (post.get('author') { %>  
  Post by <%= post.get('author') %>  
<% } %>
```

underscore

```
<% if (post.get('author')) { %>
  Post by
  <% if (post.get('alink')) { %>
    <a href="<%= post.get('alink') ">
  <% } %>
  <%= post.get('author') %>
  <% if (post.get('alink')) { %>
    </a>
  <% } %>
<% } %>
```


**templates are simple
when data is simple**

when is data simple?

D3.js

Data-Driven Documents



D3.js is a JavaScript library for manipulating documents based on data. **D3** helps you bring data to life using HTML, SVG and CSS. D3's emphasis on web standards gives you the full capabilities of modern browsers without tying yourself to a proprietary framework, combining powerful visualization

See [more examples](#).

**okay, great, how is
this different?**

markup is not data

markup is not code

“Being abstract is something profoundly different from being vague... the purpose of abstraction is not to be vague, but to create a new semantic level in which one can be absolutely precise.”

- Edsger Dijkstra

**express your
representations**

D3.js

```
var svg = d3.select("body").append("svg")
  .attr("width", size * n + padding)
  .attr("height", size * n + padding)
  .append("g")
  .attr("transform", "translate(" + padding + "," + padding / 2 + ")");

svg.selectAll(".x.axis")
  .data(traits)
  .enter().append("g")
  .attr("class", "x axis")
  .attr("transform", function(d, i) { return "translate(" + (n - i - 1) * size + ",0)"; })
  .each(function(d) { x.domain(domainByTrait[d]); d3.select(this).call(xAxis); });

svg.selectAll(".y.axis")
  .data(traits)
  .enter().append("g")
  .attr("class", "y axis")
  .attr("transform", function(d, i) { return "translate(0," + i * size + ")"; })
  .each(function(d) { y.domain(domainByTrait[d]); d3.select(this).call(yAxis); });

var cell = svg.selectAll(".cell")
  .data(cross(traits, traits))
  .enter().append("g")
  .attr("class", "cell")
  .attr("transform", function(d) { return "translate(" + (n - d.i - 1) * size + "," + d.j * size
  .each(plot);
```

**complicated, why is
that better?**

**the value of code,
abstractions**

D3.js

```
d3.hive.link = function() {
  var source = function(d) { return d.source; },
      target = function(d) { return d.target; },
      angle = function(d) { return d.angle; },
      startRadius = function(d) { return d.radius; },
      endRadius = startRadius,
      arcOffset = -Math.PI / 2;

  function link(d, i) {
    var s = node(source, this, d, i),
        t = node(target, this, d, i),
        x;
    if (t.a < s.a) x = t, t = s, s = x;
    if (t.a - s.a > Math.PI) s.a += 2 * Math.PI;
    var a1 = s.a + (t.a - s.a) / 3,
        a2 = t.a - (t.a - s.a) / 3;
    return s.r0 - s.r1 || t.r0 - t.r1
      ? "M" + Math.cos(s.a) * s.r0 + "," + Math.sin(s.a) * s.r0
      + "L" + Math.cos(s.a) * s.r1 + "," + Math.sin(s.a) * s.r1
      + "C" + Math.cos(a1) * s.r1 + "," + Math.sin(a1) * s.r1
      + " " + Math.cos(a2) * t.r1 + "," + Math.sin(a2) * t.r1
      + " " + Math.cos(t.a) * t.r1 + "," + Math.sin(t.a) * t.r1
      + "L" + Math.cos(t.a) * t.r0 + "," + Math.sin(t.a) * t.r0
```

**easier than, inline
blocks, partials, or
helpers**

Selection, enter, and exit


```
var chart = d3.select(".charts")  
  .selectAll("div")  
  .data(data, function(d) { return d.action; });
```

```
chart  
  .selectAll("span")  
  .text(function(d) { return d.action; });
```

```
chart
  .enter()
  .append("div")
  .classed({ "bar-item": true })
  .append("span");
```

```
var x = d3.scale.linear()  
  .domain([0, d3.sum(data,  
    function(d) { return d.value; })])  
  .range([0, 100]);
```

```
chart  
  .data(data,  
    function(d) { return d.action; });
```

```
chart  
  .style("width",  
    function(d) { return x(d.value) + "%"; });
```

```
.charts .bar-item {  
  ...  
  width: 0%;  
  -webkit-transition: width 1s ease-in-out;  
  -moz-transition: width 1s ease-in-out;  
  -o-transition: width 1s ease-in-out;  
  transition: width 1s ease-in-out;  
}
```



```
chart  
  .exit ()  
  .remove ();
```

You are now experts

Extending

```
row.append("td").append('span')
    .classed({'aui-avatar': true,
             'aui-avatar-xsmall': true})
    .append('span')
    .classed({'aui-avatar-inner': true})
    .append('img')
    .attr('src', function(item) {
        return item.avatarUrls["16x16"];
    });
```



```
<td>
  <span class="aui-avatar aui-avatar-xsmall">
    <span class="aui-avatar-inner">
      
    </span>
  </span>
</td>
```

```
d3.selection.enter.prototype.appendSelector =
d3.selection.prototype.appendSelector =
function(selector) {
  var self = this;
  var selectorParts = selector.split(/([\.\#\s])/);
  if (selectorParts.length == 0) return self;
  self = self.append(selectorParts.shift());

  while (selectorParts.length > 1) {
    var selectorModifier = selectorParts.shift();
    var selectorItem = selectorParts.shift();
    if (selectorModifier === ".") {
      self = self.classed(selectorItem, true);
    } else if (selectorModifier === "#") {
      self = self.attr('id', selectorItem);
    }
  }
  return self;
};
```

```
row.append("td").append('span')
    .classed({'aui-avatar': true,
             'aui-avatar-xsmall': true})
    .append('span')
    .classed({'aui-avatar-inner': true})
    .append('img')
    .attr('src', function(item) {
        return item.avatarUrls["16x16"];
    });
```

```
row.append("td")
    .appendSelector('span.aui-avatar.aui-avatar-
xsmall')
    .appendSelector('span.aui-avatar-inner')
    .append('img')
    .attr('src', function(item) { return
item.avatarUrls["16x16"] });
```

```
var projHeadRow =  
projTable.append("thead").append("tr");  
projHeadRow.append("th");  
projHeadRow.append("th").text("Key");  
projHeadRow.append("th").text("Name");
```



```
projHeadRow = projTable.createTableHeaderWithHeadings (  
  [  
    "",  
    "Key",  
    "Name"  
  ] ) ;
```

**Tools in hand,
it's demo time**

Questions & take aways

- d3js.org
- bit.ly/fowa2014-ed3
- @TravisTheTechie
- spkr8.com/t/38921

Thanks for coming!

