

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)

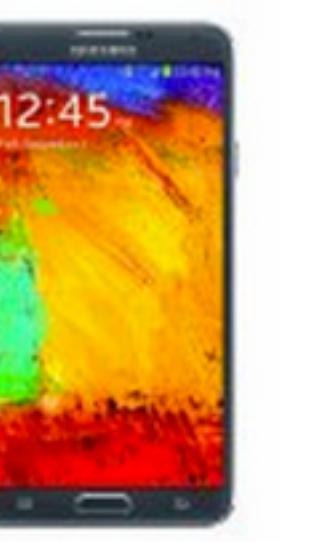
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Kyocera Hydro Vibe, Charcoal Gray 8GB

★★★★★ (9)

\$0.01 - \$149.99



Samsung Galaxy Note 3, Black 32GB

★★★★★ (247)

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BlackBerry Q10, Black 16GB (Sprint)

★★★★★ (35)

\$29.99 - \$529.99

Phones from AT&T



LG G3, Metallic Black 32GB (AT&T)

★★★★★ (66)

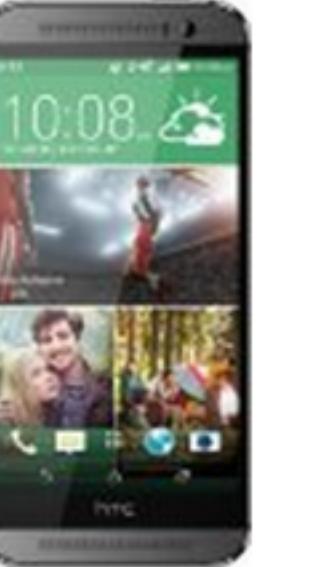
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Samsung Galaxy S5, White 16GB (AT&T)

★★★★★ (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)

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Samsung Galaxy S5, Black 16GB (AT&T)

★★★★★ (83)

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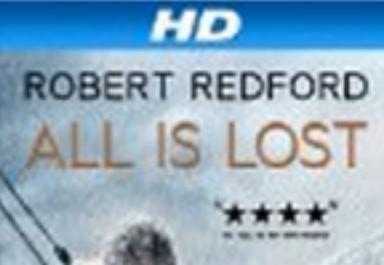


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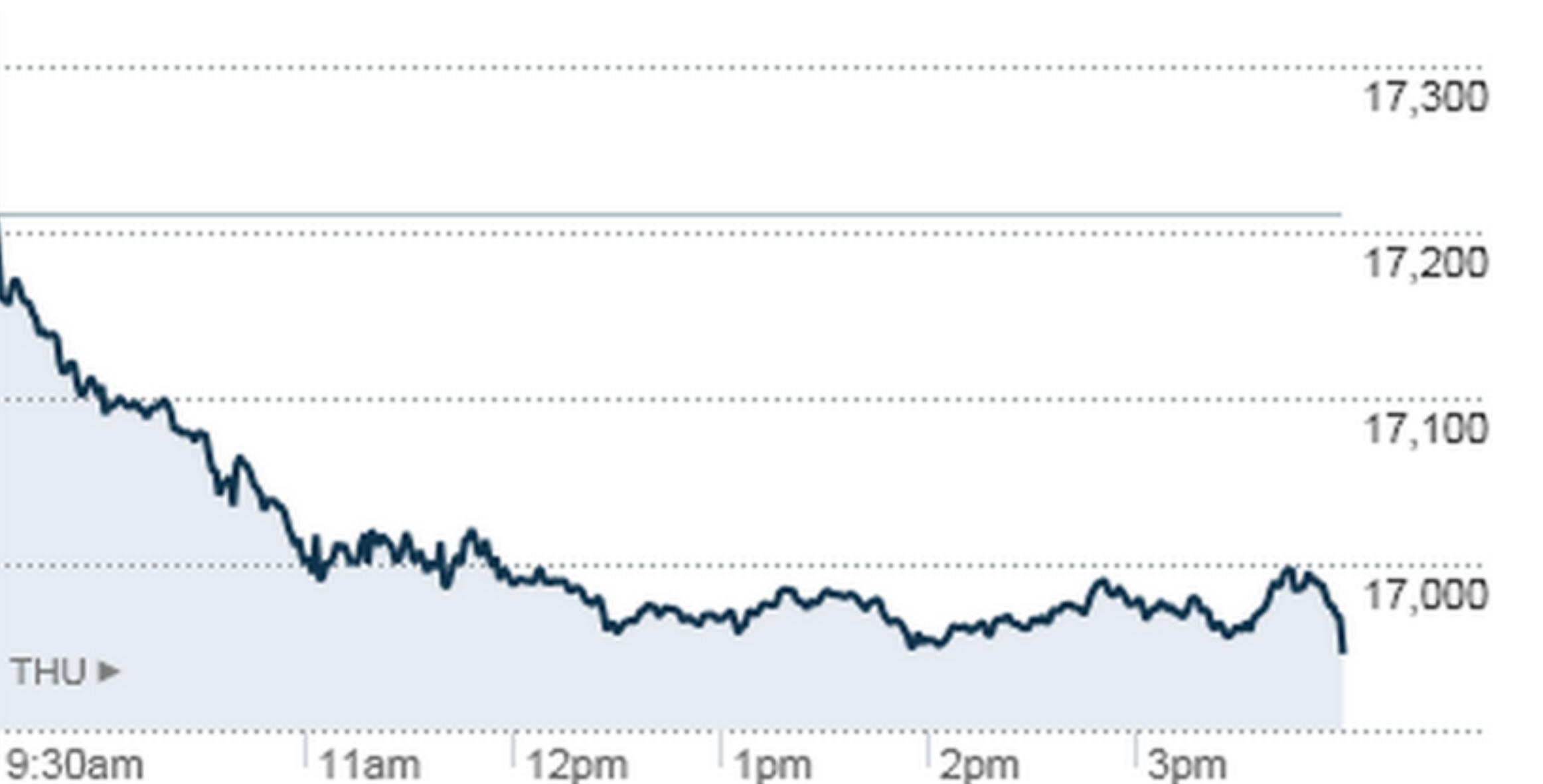


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MSI Motorola Solutions...	62.24	+0.71%	ATI Allegheny Technolo...	38.86	-4.82%
AN AutoNation Inc	49.98	+0.66%	AAPL Apple Inc	97.87	-3.81%
HCP HCP Inc	39.72	+0.63%	BIIB Biogen Idec Inc	333.40	-3.73%
VTR Ventas Inc	61.43	+0.47%	AVP Avon Products Inc	12.88	-3.52%
FE FirstEnergy Corp	33.87	+0.36%	TDC Teradata Corp	41.76	-3.38%

Data as of 4:00pm ET

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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') %>
<% } %>
```

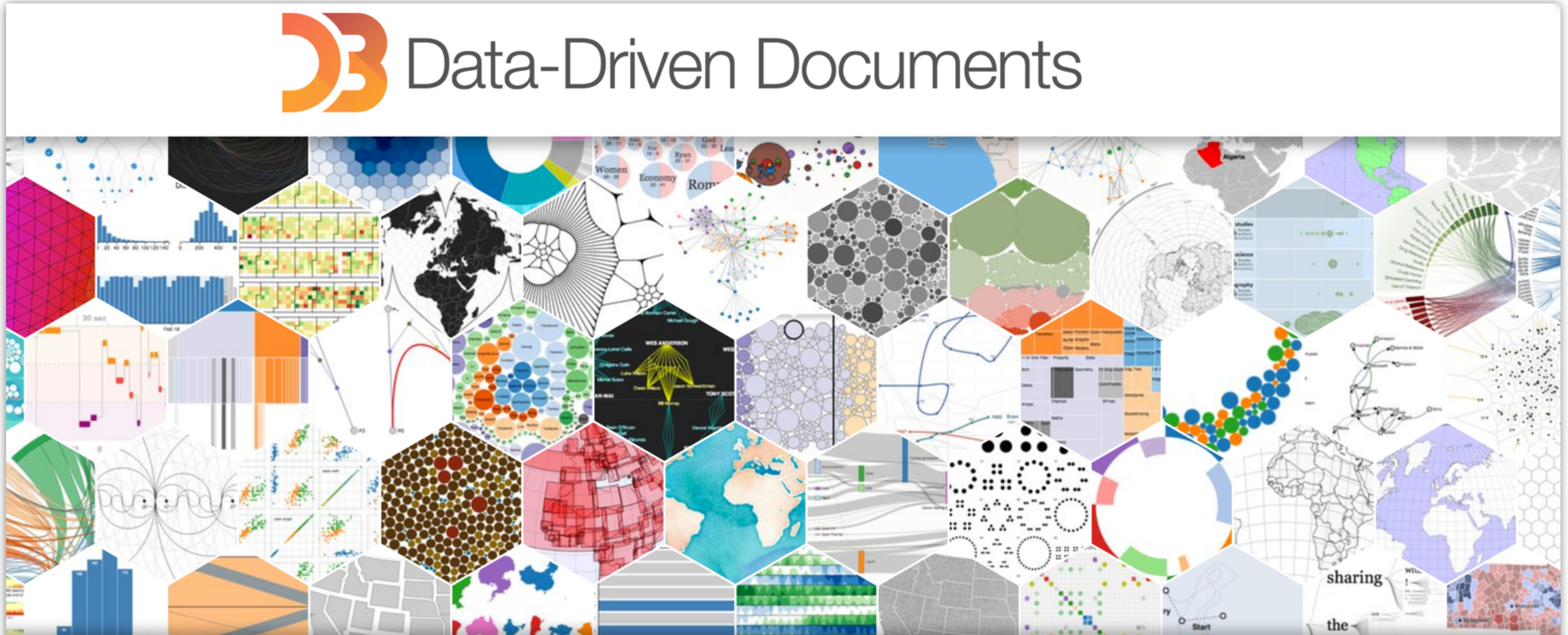
underscore

```
<% 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



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(/(\.\#)/);
    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 = selfclassed(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!

