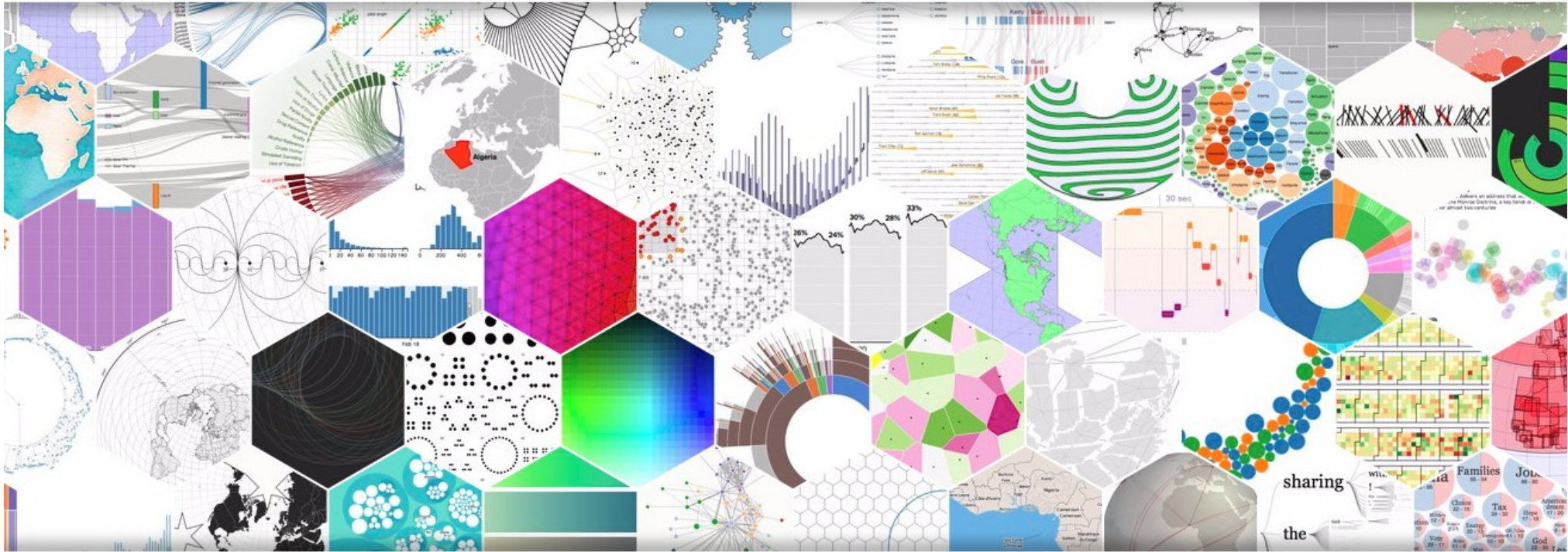


Data-Driven Documents

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Lukáš Cíсар

History

Initial release:

18 February 2011; 6 years ago

Stable release:

4.10.2 / 3 September 2017;

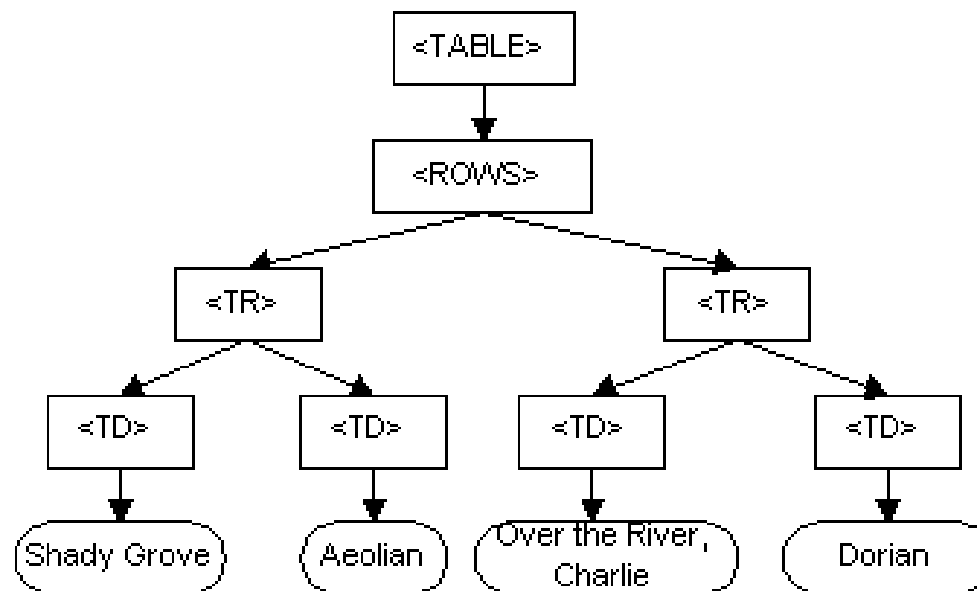
Authors' definition

D3.js is a **JavaScript** library for producing dynamic, interactive **data visualizations** in **web browsers**. It makes use of the widely implemented **SVG**, **HTML5**, and **CSS** standards.

Functionality

- Library uses pre-built JavaScript functions to **select elements, create SVG objects**, style them, or add **transitions, dynamic effects** or **tooltips** to them.
- Large **datasets** can be easily **bound to SVG objects** using simple D3.js functions to generate rich text/graphic charts and diagrams.
- The data can be in various **formats**, most commonly **JSON**, comma-separated values (**CSV**) or geoJSON, but, if required, JavaScript functions can be written to read **other data formats**.

DOM example



Selections

- The selection can be based on **tag, class, identifier, attribute, or place in the hierarchy**.
- Once elements are selected, one can apply **operations** to them. This includes **getting and setting attributes, display texts, and styles**
- Elements may also be **added and removed**. This process of modifying, creating and removing HTML elements can be made **dependent on data**, which is the basic concept of D3.js.

Selections

```
d3.selectAll("p")           // select all <p> elements
  .style("color", "lavender") // set style "color" to value "lavender"
  .attr("class", "squares")  // set attribute "class" to value "squares"
  .attr("x", 50);           // set attribute "x" (horizontal position)
                           // to value 50px
```

Transitions

```
d3.selectAll("p")           // select all <p> elements
  .transition("trans_1")    // transition with name "trans_1"
    .delay(0)               // transition starting 0ms after trigger
    .duration(500)          // transitioning during 500ms
    .ease("linear")         // transition easing progression is linear...
    .style("color", "pink"); // ... to color:pink
```


Dynamic properties

- styles, attributes, and other properties can be specified as **functions of data** in D3, not just simple constants.

```
d3.selectAll("p").style("color", function(d, i) {  
  return i % 2 ? "#fff" : "#eee";  
});
```

Data-binding

```
// Data
var data = [
  { name:"Ireland",   income:53000, life: 78, pop:6378, color: "black"},
  { name:"Norway",   income:73000, life: 87, pop:5084, color: "blue" },
  { name:"Tanzania", income:27000, life: 50, pop:3407, color: "grey" }
];
// Create SVG container
var svg = d3.select("#hook").append("svg")
  .attr("width", 120)
  .attr("height", 120)
  .style("background-color", "#D0D0D0");
// Create SVG elements from data
svg.selectAll("circle") // create virtual circle template
  .data(data)           // bind data
  .enter()              // for each row in data...
  .append("circle")    // bind circle & data row such that...
  .attr("id", function(d) { return d.name }) // set the circle's id
                                           // according to the country name
  .attr("cx", function(d) { return d.income / 1000 }) // set the
                                           // circle's horizontal position according to income
  .attr("cy", function(d) { return d.life }) // set the circle's
                                           // vertical position according to life expectancy
  .attr("r", function(d) { return d.pop / 1000 *2 }) // set the
                                           // circle's radius according to country's population
  .attr("fill", function(d) { return d.color }); // set the
                                           // circle's color according to country's color
```

API structure

- Selections
- Transitions
- Arrays
- Math
- Color
- Scales
- SVG
- Time
- Layouts
- Geography
- Geometry
- Behaviors

Examples

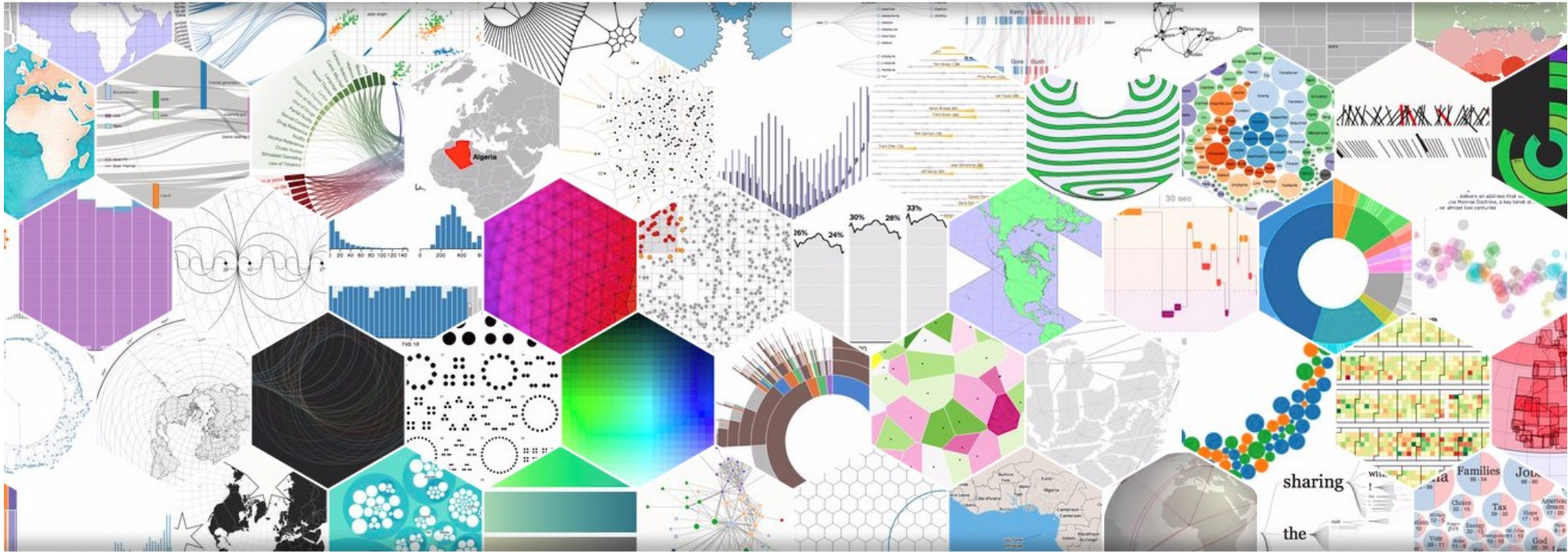
- <http://www.nytimes.com/newsgraphics/2013/09/13/fashion-week-editors-picks/>
- <https://bl.ocks.org/mbostock/4330486>

Resources

- <https://www.w3.org/TR/WD-DOM/introduction.html>
- <https://en.wikipedia.org/wiki/D3.js>
- <https://www.dashingd3js.com/d3js-first-steps>
- <https://d3js.org>

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