

D3.js

...

FI:PA055 Vizualizace komplexních dat

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Motivation

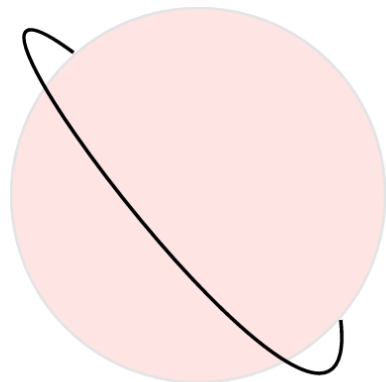
- 3 possible ways to make visualization
 - use excel
 - draw it
 - program it
- (meta)graphical languages in web browser
- javascript, css3
- the end of flash, ...
- protovis.js

```
HTML Tidy x
<?xml version="1.0" ?
<svg xmlns="http://www.w3.org/2000/svg"
xmlns:xlink="http://www.w3.org/1999/xlink">
<circle id="planet" cx="310" cy="310" r="210"></circle>
<path id="ring" d="M170 150 C-60 -20, 500 720, 470 450" />
</svg>

CSS Tidy View Compiled x
#planet{
  fill: red;
  stroke: black;
  stroke-width: 3px;
  animation: hideshow 10s ease infinite;
}

#ring {
  stroke: black;
  fill: transparent;
}

JS Tidy x
$( "#planet" ).mouseenter(function(){
  $( this ).css( "fill", "blue" )
}).mouseleave(function(){
  $( this ).css( "fill", "red" )
})
```



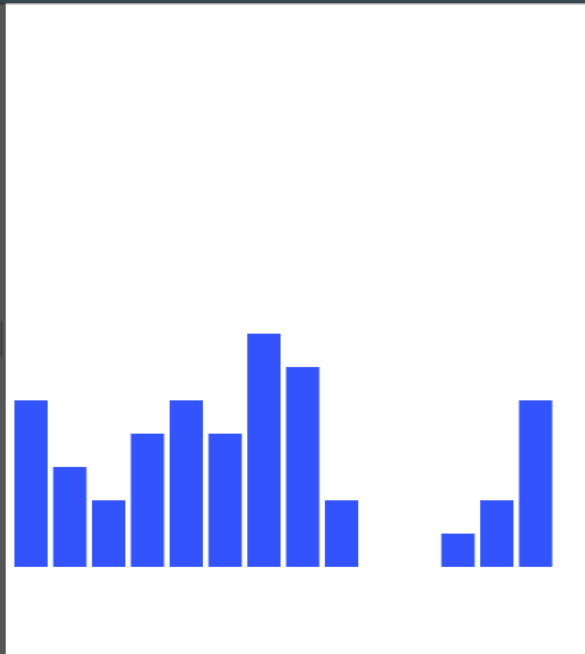
Principle - data driven

- dataset forms the document ~ visualization
- DOM manipulation

```
HTML
1 <svg id="vis">
2 </svg>

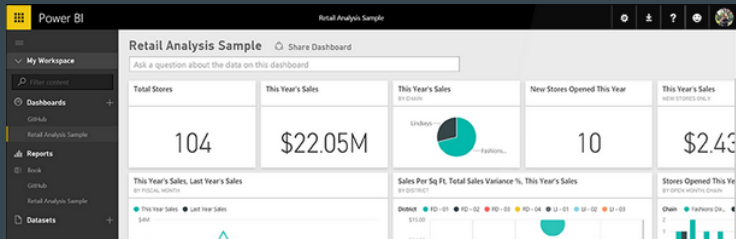
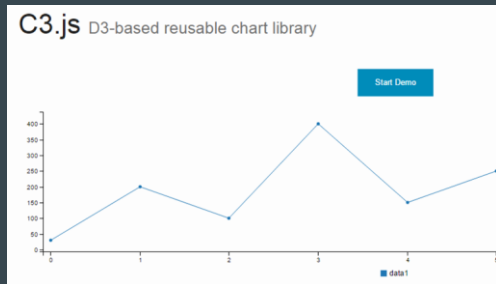
CSS
1 svg {
2   width: 500px; height: 500px
3 }
4 .bar {
5   fill: #3354fd;

JS
1 var data = [5,3,2,4,5,4,7,6,2,0,1,2,8];
2 var a = 30
3
4 var svg = d3.select("svg")
5 var bars = svg.selectAll(".bar")
6   .data(data)
7   .enter().append("rect")
8   .attr("class", "bar")
9   .attr("x", function(d) {
10    return d })
11   .attr("width", function(d) { return 30 })
12   .attr("y", function(d) { return 500 - d * a; })
13   .attr("height", function(d) { return d * a; });
14
15 d3.selectAll(".bar")
16   .each(function(b, i){
17     $(this).css('x', i * 35)
18   })
```



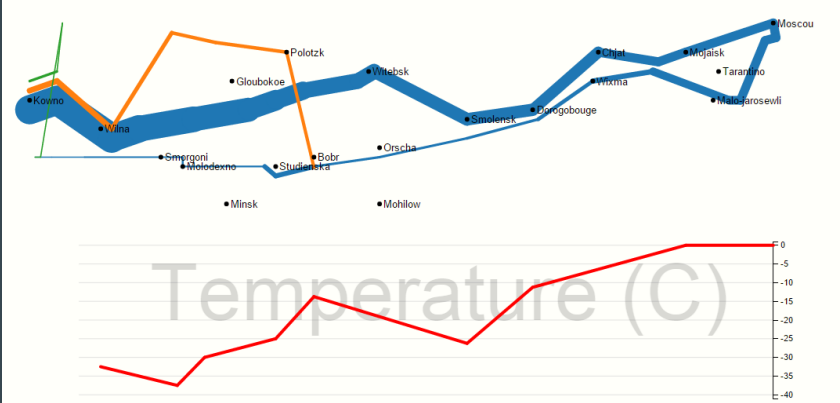
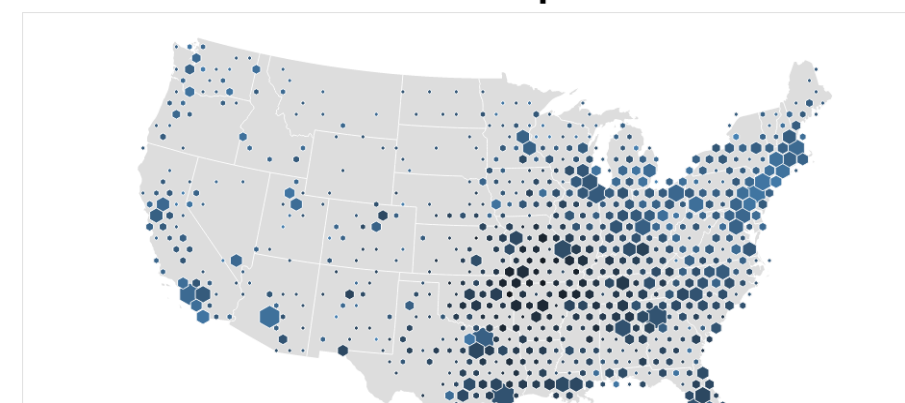
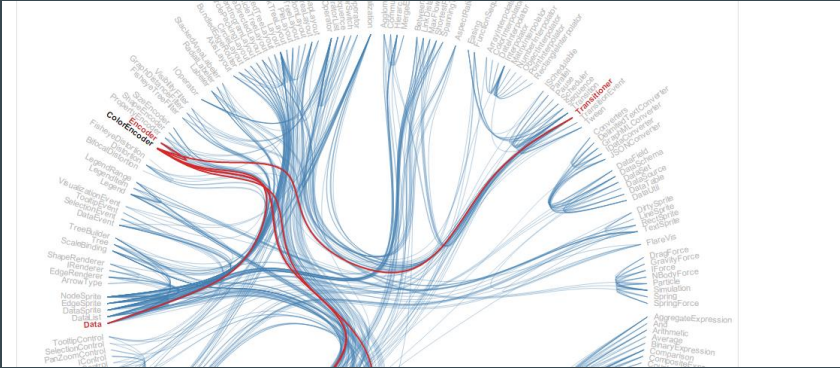
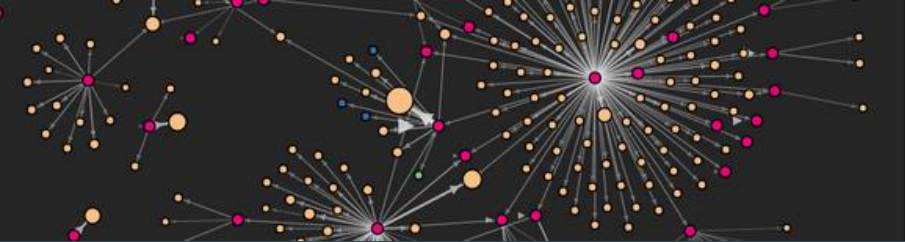
Principle - scalability

- full control over visualization
- ability to create own types of visualization
- extensions
- systems built on top of D3 library



Examples, tutorials

- <http://blocks.org/>



Main characteristics

- DOM manipulation (svg) (<-> interactivity)
- jQuery
- bl.ocks.org + documentation
- community
- not so easy to learn - very complex

Future

- breaking D3 up into smaller modules
- layout system
- community

Sources

https://www.reddit.com/r/dataisbeautiful/comments/3k3if4/hi_im_mike_bostock_creator_of_d3js_and_a_former/

<http://benschmidt.org/D3-trail/minard.html>

<http://c3js.org/>

<https://plot.ly/javascript/>

<http://bl.ocks.org/>

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