

Macoun



Datenvisualisierung auf iOS

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Ablauf

Einleitung

Die Welt in D3

D3.js auf iOS

Fazit

Fragen

Gezwitscher erwünscht!

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Einleitung

"When I am working on a problem, I never think about beauty. I think only of how to solve the problem. But when I have finished, if the solution is not beautiful, I know it is wrong."

R. Buckminster Fuller

Daten visualisieren. Wozu?

Daten verstehen.

Daten besser verstehen.

Warum?

Daten sehen und verstehen

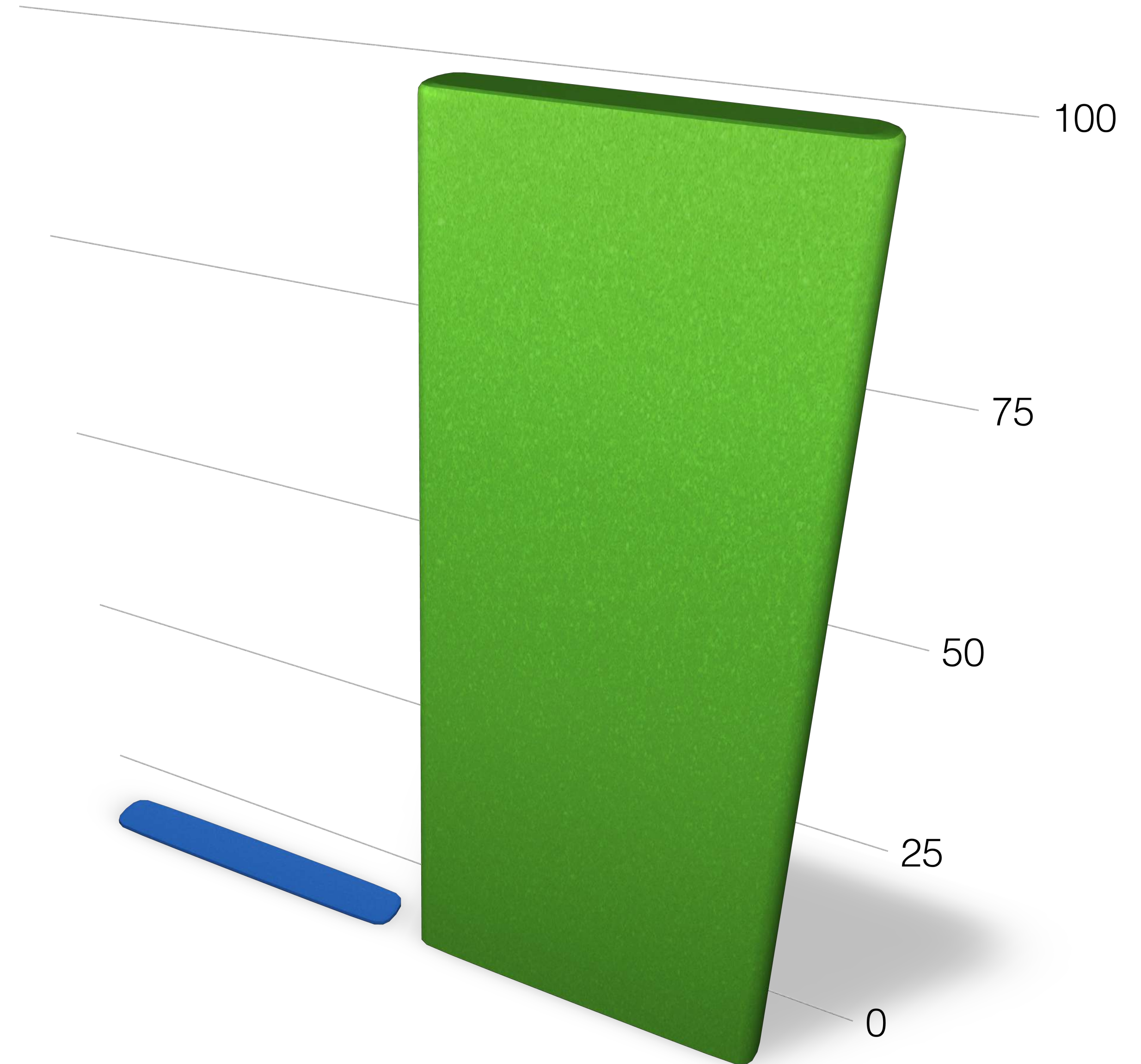
Besser merken

Abstraktem eine Form geben

Veranschaulichung von Zusammenhängen und Ausmass

Intuitiv / interaktiv

Macoun

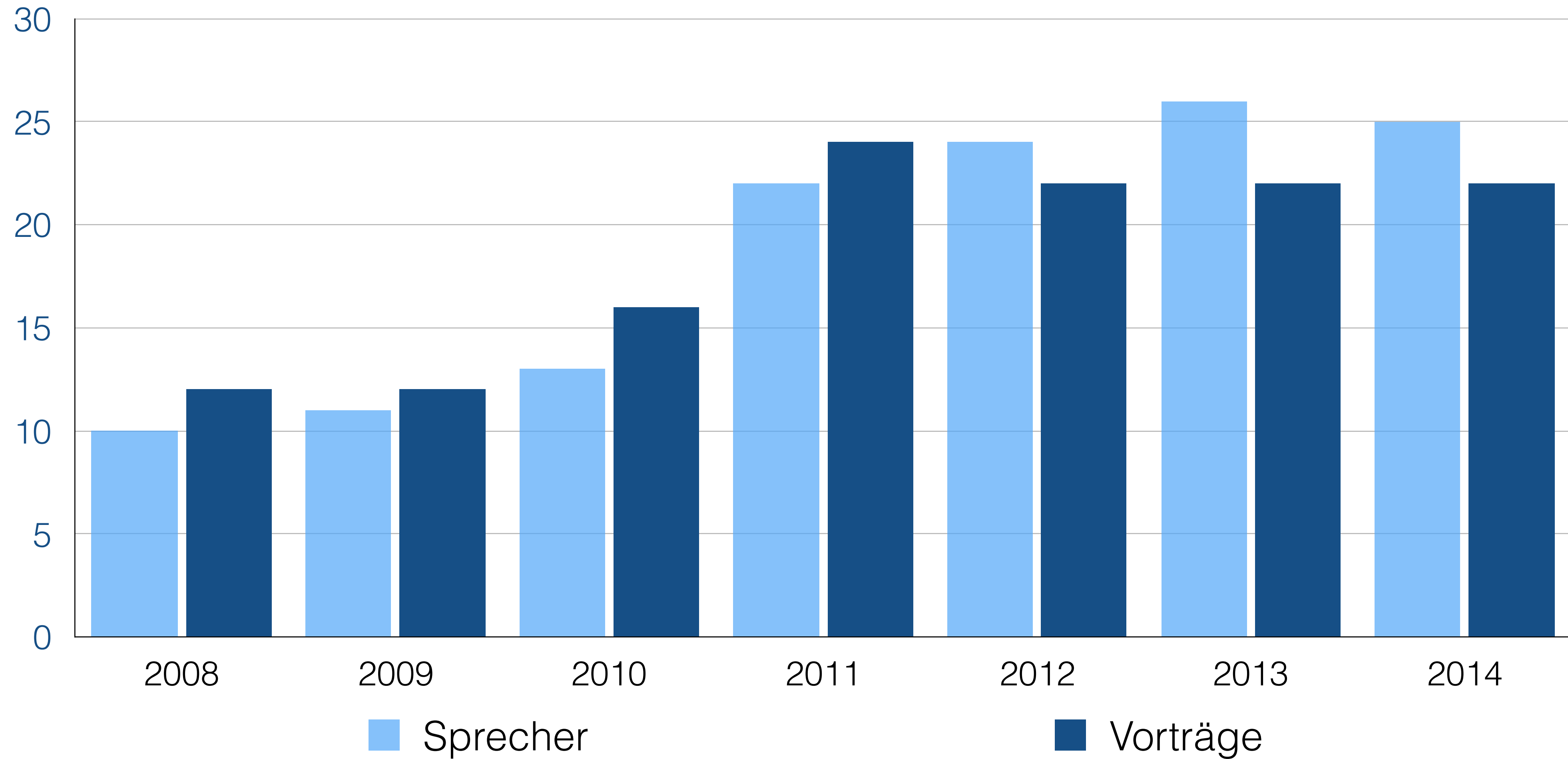


“Graphical excellence is that which gives to the viewer the greatest number of **ideas** in the shortest time with the least ink in the smallest space.”

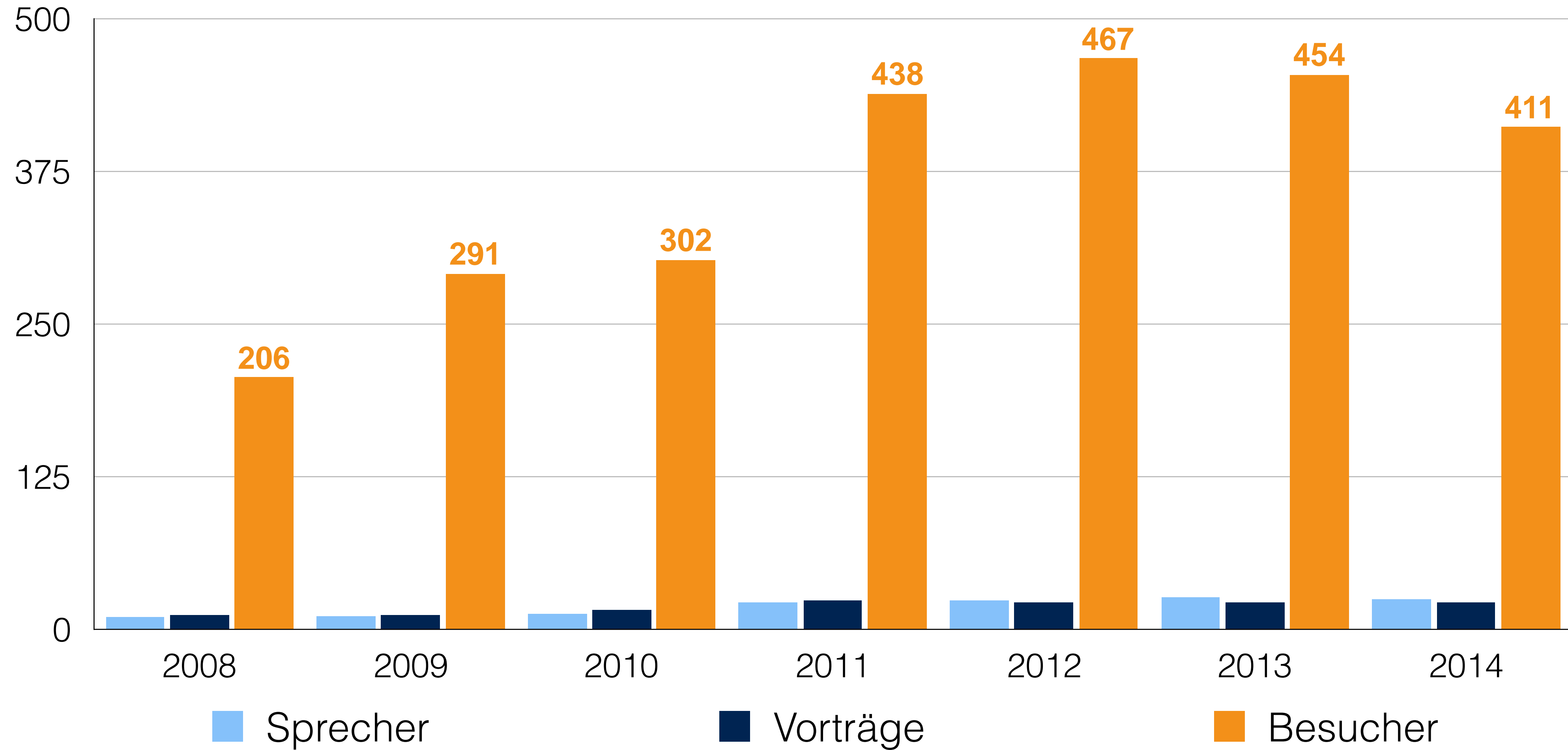
Edward R. Tufte

The Visual Display of Quantitative Information

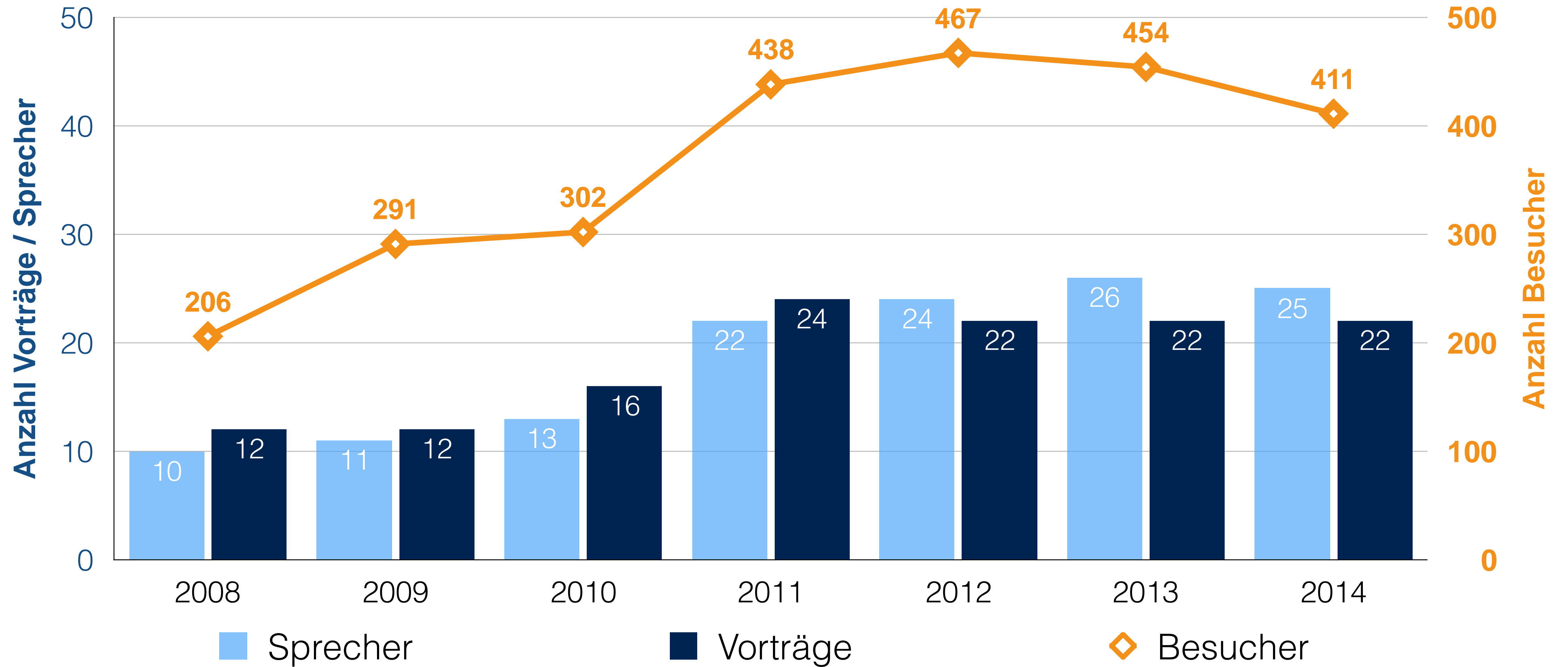
Sprecher und Vorträge – Macoun 2008-2014



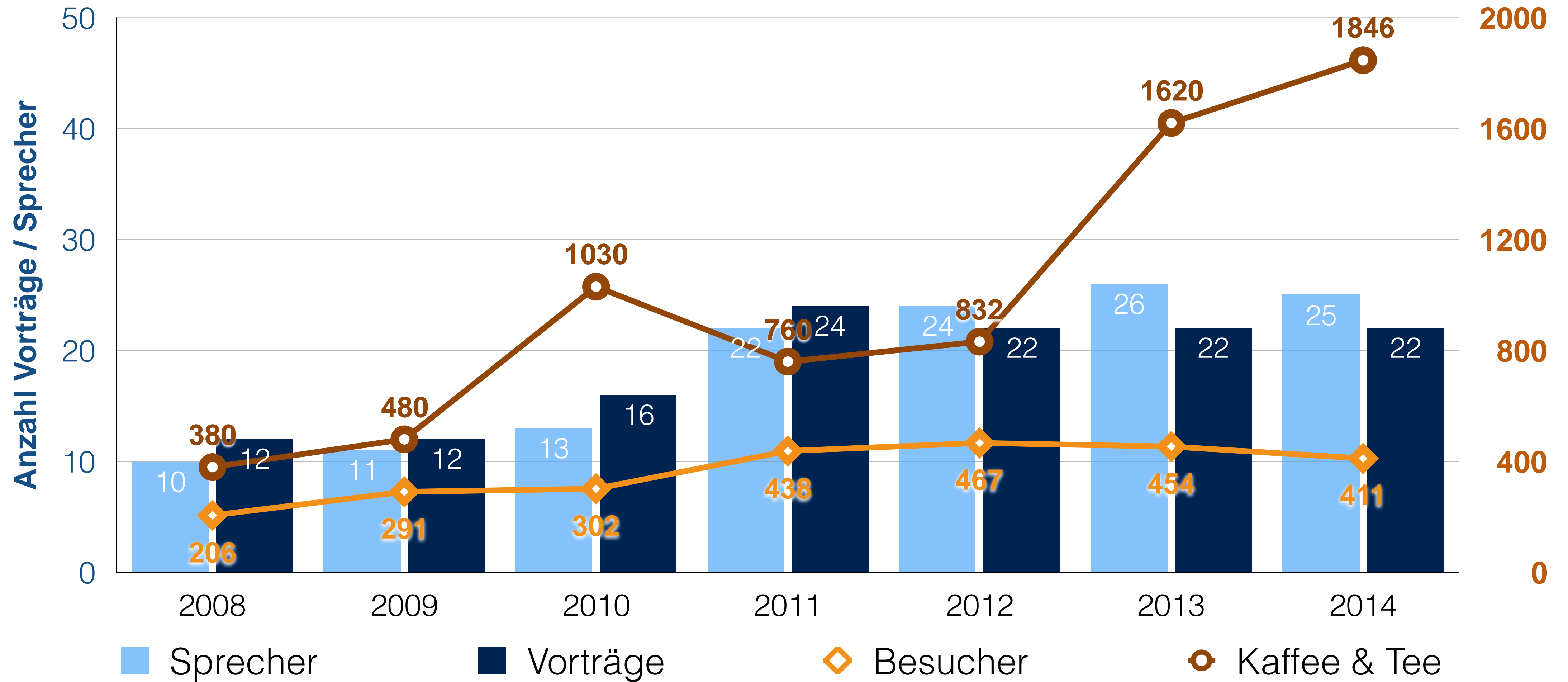
Sprecher- und Besucherzahlen – Macoun 2008-2014



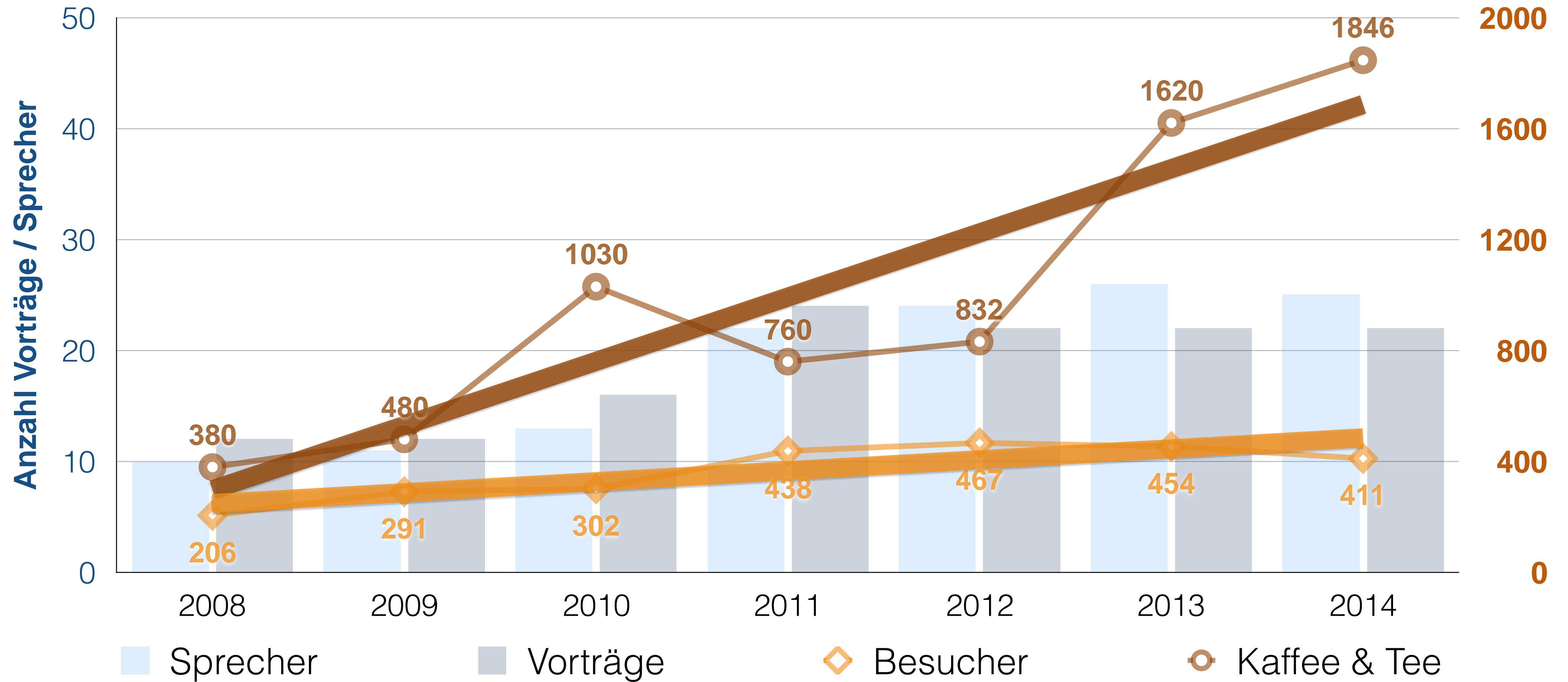
Sprecher- und Besucherzahlen – Macoun 2008-2014



Heissgetränkekonsum – Macoun 2008-2014

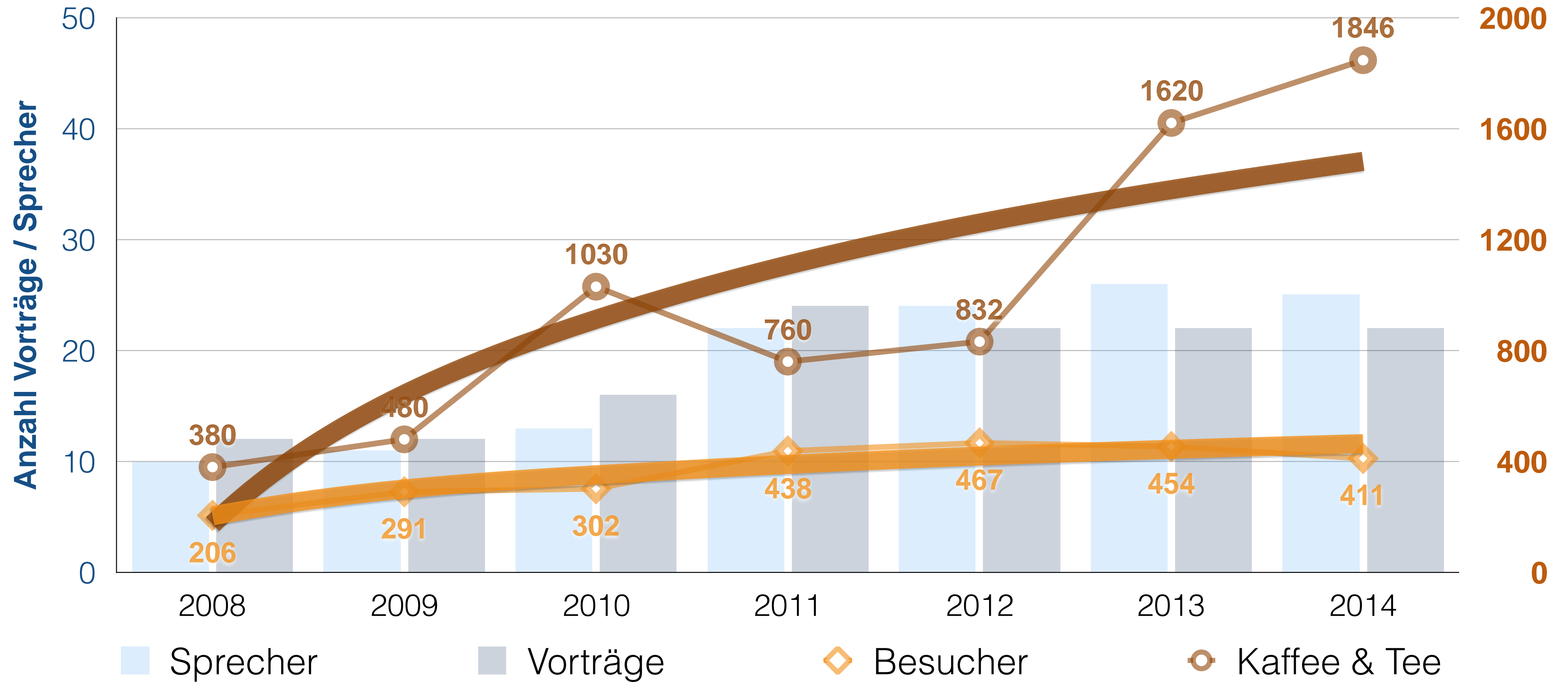


“Trend Linear” Heissgetränkekonsum – Macoun 2008-2014



With great `pow()` comes
great responsibility.

“Trend Log.” Heissgetränkekonsum – Macoun 2008-2014



Tools und Libraries

“Before software can be reusable it first has to be usable.”

Ralph Johnson

Anpassbarkeit

Chart-Typen

Lösungen von der Stange

web-basiert

Support

Die Qual der Wahl

Community

Anwendungsfall

iOS nativ

Plattform

Selbstgemacht

Mac / iOS:

Core Graphics / Quartz

Apple Beispielprojekt **SimpleStocks**

Web:

Mit HTML5 Canvas selber zeichnen

ios-charts

Swift 2.0

Android-Version MPAndroidChart

Nicht kommerziell

<https://github.com/danielgindi/ios-charts>

README.md

Version 2.1.4, synced to MPAndroidChart #6ae1eef

ios-charts

created by Daniel Cohen Gindi, inspired by Philipp Jahoda

vote codehunt.io

- Xcode 7 / Swift 2.0
- iOS 7.0 (Drag .swift files to your project)
- iOS 8.0 / 9.0 (Use as an **Embedded** Framework)

SwiftCharts

Swift 1.2, 2.x, iOS 7, 8, 9

Nicht kommerziell

<https://github.com/i-schuetz/SwiftCharts>

Core Plot

Klassiker

OS X and iOS

Guter Legacy-Support

Open Source (BSD License)

<https://github.com/core-plot/core-plot>

ShinobiControls

Multi-Plattform:

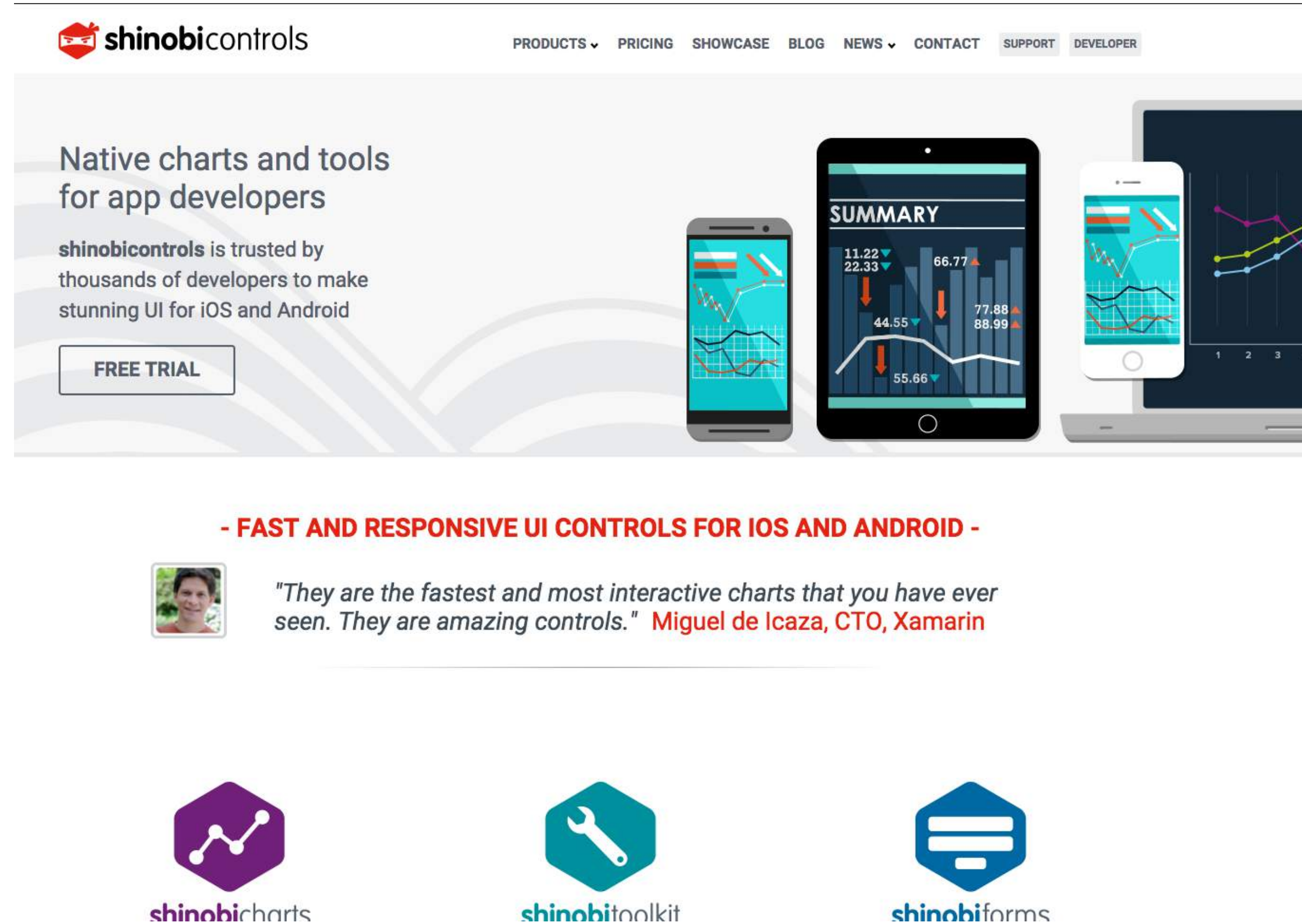
iOS (ObjC, Swift)

Android in Java

Xamarin C# (iOS + Android)

Kostenpflichtig

<https://www.shinobicontrols.com>



The screenshot shows the ShinobiControls website. The header includes the logo and navigation links: PRODUCTS, PRICING, SHOWCASE, BLOG, NEWS, CONTACT, SUPPORT, and DEVELOPER. The main content area features the text "Native charts and tools for app developers" and "shinobicontrols is trusted by thousands of developers to make stunning UI for iOS and Android". A "FREE TRIAL" button is present. To the right, there are images of a smartphone, a tablet, and a laptop, all displaying various charts and data visualizations. Below this, a red banner reads "- FAST AND RESPONSIVE UI CONTROLS FOR IOS AND ANDROID -". A testimonial from Miguel de Icaza, CTO of Xamarin, is included, stating: "They are the fastest and most interactive charts that you have ever seen. They are amazing controls." At the bottom, there are three logos: shinobicharts, shinobitoolkit, and shinobiforms.

shinobicontrols


PRODUCTS ▾ PRICING SHOWCASE BLOG NEWS ▾ CONTACT SUPPORT DEVELOPER

Native charts and tools for app developers

shinobicontrols is trusted by thousands of developers to make stunning UI for iOS and Android

FREE TRIAL

- FAST AND RESPONSIVE UI CONTROLS FOR IOS AND ANDROID -

 "They are the fastest and most interactive charts that you have ever seen. They are amazing controls." Miguel de Icaza, CTO, Xamarin

shinobicharts shinobitoolkit shinobiforms

NChart3D

OS X, iOS und Android

Kostenpflichtig

<http://nchart3d.com>



NChart3D is universal charting framework for iOS, OS X and Android enabling stunning data visualization in 2D and 3D, including:

- › analytics, business and science charts in 2D & 3D
- › automatic animations
- › customizable themes
- › multiple value axes
- › hardware acceleration

NGrid is smart grid, table and spreadsheet framework for iOS devices with advanced features:

- › single and multidimensional tables
- › conditional formatting, growth indicators and sparklines
- › sections and hierarchy
- › data searching, selecting and editing
- › themes, styles and customization

D3.js ...

Die Welt in D3

“Java is to JavaScript as car is to carpet.”

Chris Heilmann

Was D3 **nicht** ist

Keine Map-Bibliothek ...

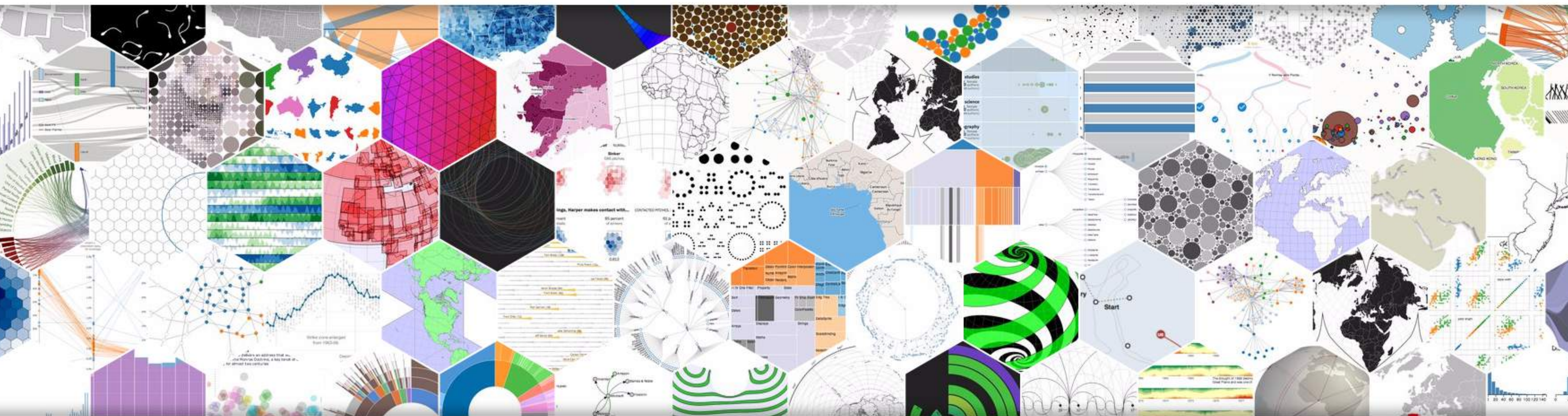
Keine Diagramm-Bibliothek ...

Keine Kompatibilitätsschicht für alte Browser

Keine Abstraktionsebene

man arbeitet mit SVG-, HTML- und Canvas-Elementen

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 components and a data-driven approach to DOM manipulation.

See [more examples](#).

Download the latest version (3.5.6) here:

- [d3.zip](#)

Or, to link directly to the latest release, copy this snippet:

```
<script src="https://cdnjs.cloudflare.com/ajax/libs/d3/3.5.6/d3.min.js" charset="utf-8"></script>
```


Data-Driven Documents

Datengetriebene Dokumente

Universell und mehrzweckfähig

Web-Standards und HTML, SVG und CSS

Schnell, wenig Overhead, unterstützt grosse Datensätze

Dynamisch: Interaktion und Animation

Komponenten- und Plug-in-Architektur

[See more examples.](#)

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• [d3.zip](#)

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```
<script src="https://cdnjs.cloudflare.com/ajax/libs/d3/3.5.6/d3.min.js" charset="utf-8"></script>
```

Zeig mir Code!

Selections

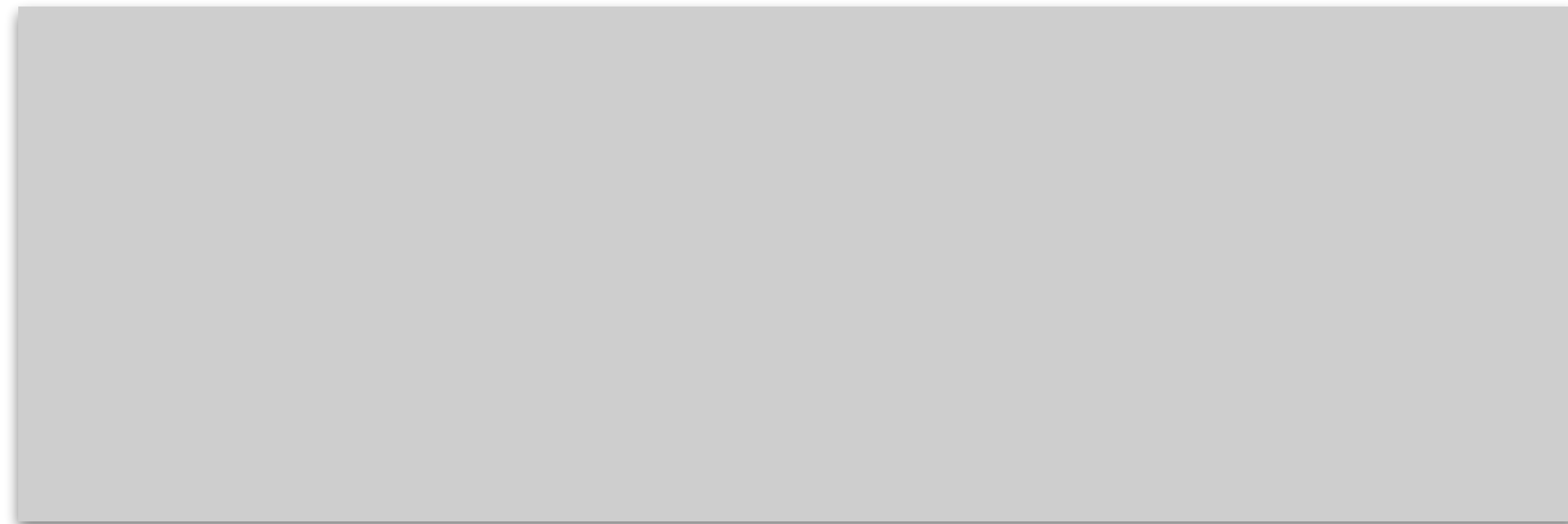
```
<div class="selection">
  Hallo Macoun!
</div>

<script>
d3.select('.selection')
  .style('background', 'red')
  .style('color', 'white')
  .style('padding', '10px');
</script>
```

Hallo Macoun!

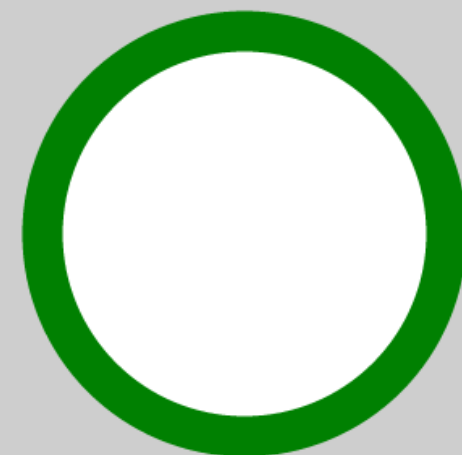
Formen

```
// Create canvas  
var svg = d3.select('.shapes')  
  .append('svg')  
  .attr('width', 600)  
  .attr('height', 200)
```



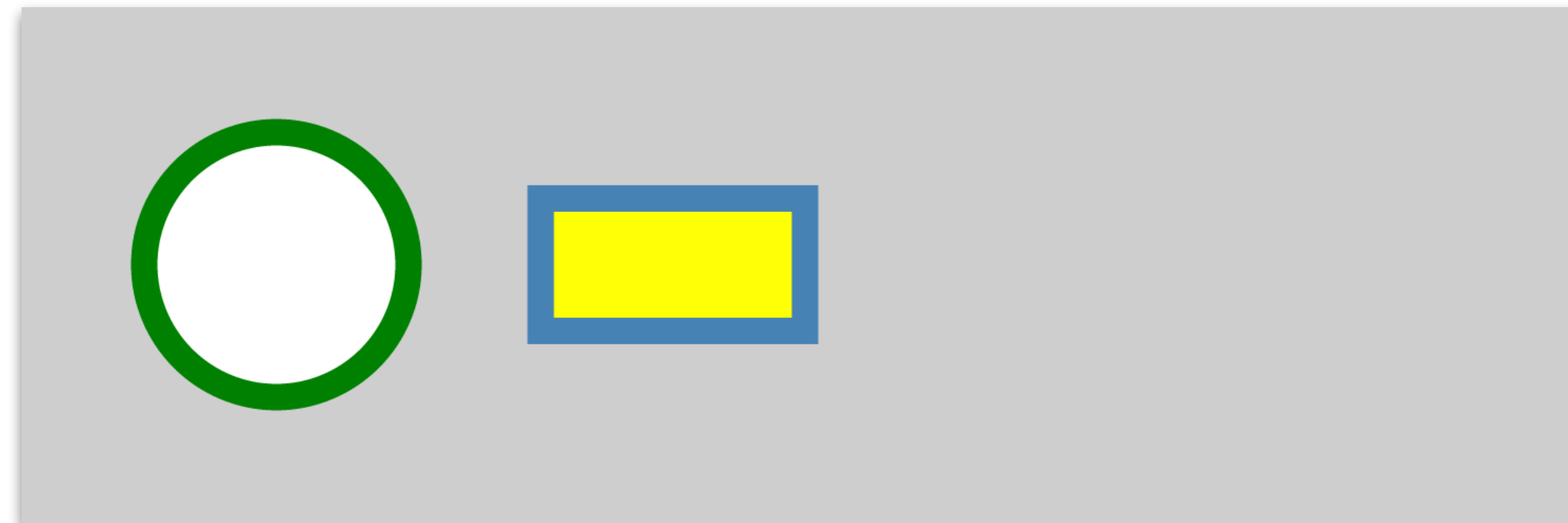
Formen

```
// Circle
svg.append('circle')
    .attr('transform', 'translate(100, 100)') // centre of circle
    .attr('r', 50)
    .attr('stroke', 'green')
    .attr('stroke-width', 10)
    .attr('fill', 'white');
```



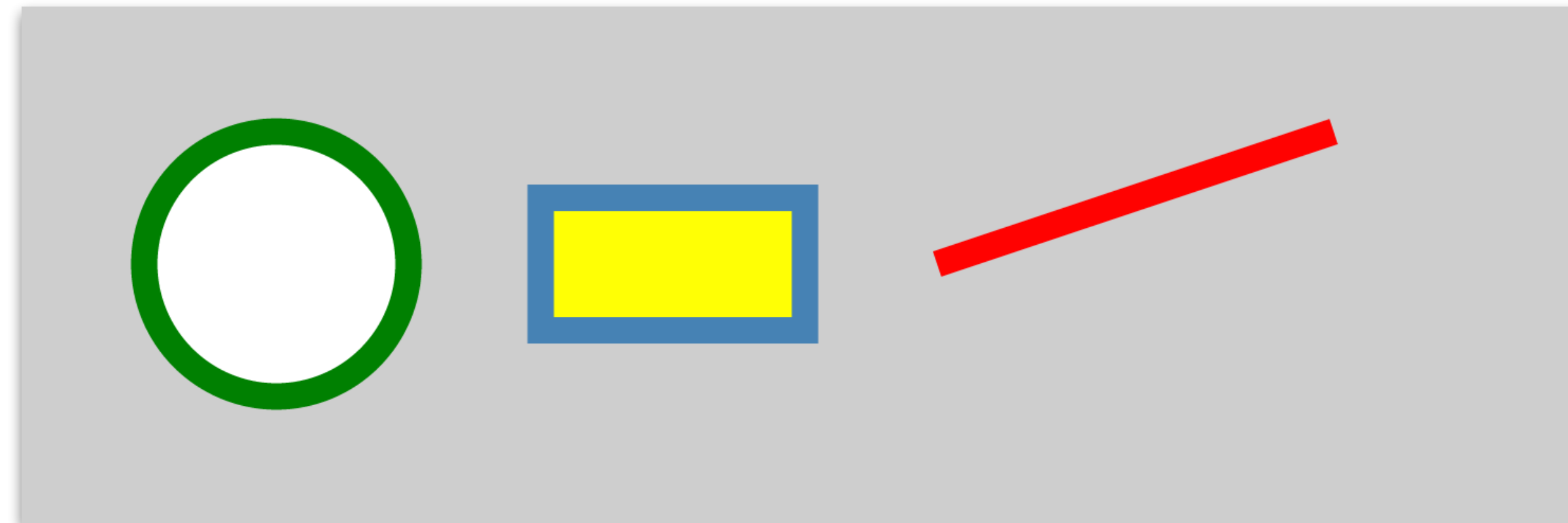
Formen

```
// Rect
svg.append('rect')
    .attr('x', 200)
    .attr('y', 75)
    .attr('width', 100)
    .attr('height', 50)
    .attr('stroke', 'steelblue')
    .attr('stroke-width', 10)
    .attr('fill', 'yellow');
```



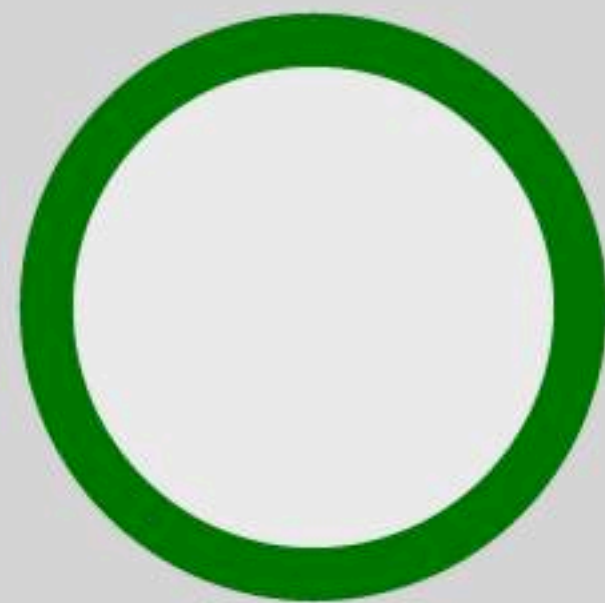
Formen

```
// Line  
svg.append('line')  
  .attr('x1', 350)  
  .attr('y1', 100)  
  .attr('x2', 500)  
  .attr('y2', 50)  
  .attr('stroke', 'red')  
  .attr('stroke-width', 10);
```



Transitions

```
var svg = d3.select('.transitions')  
  .transition('svg')  
  .duration(2000);  
  
svg.select('circle')  
  .attr('r', 75)  
  ...
```

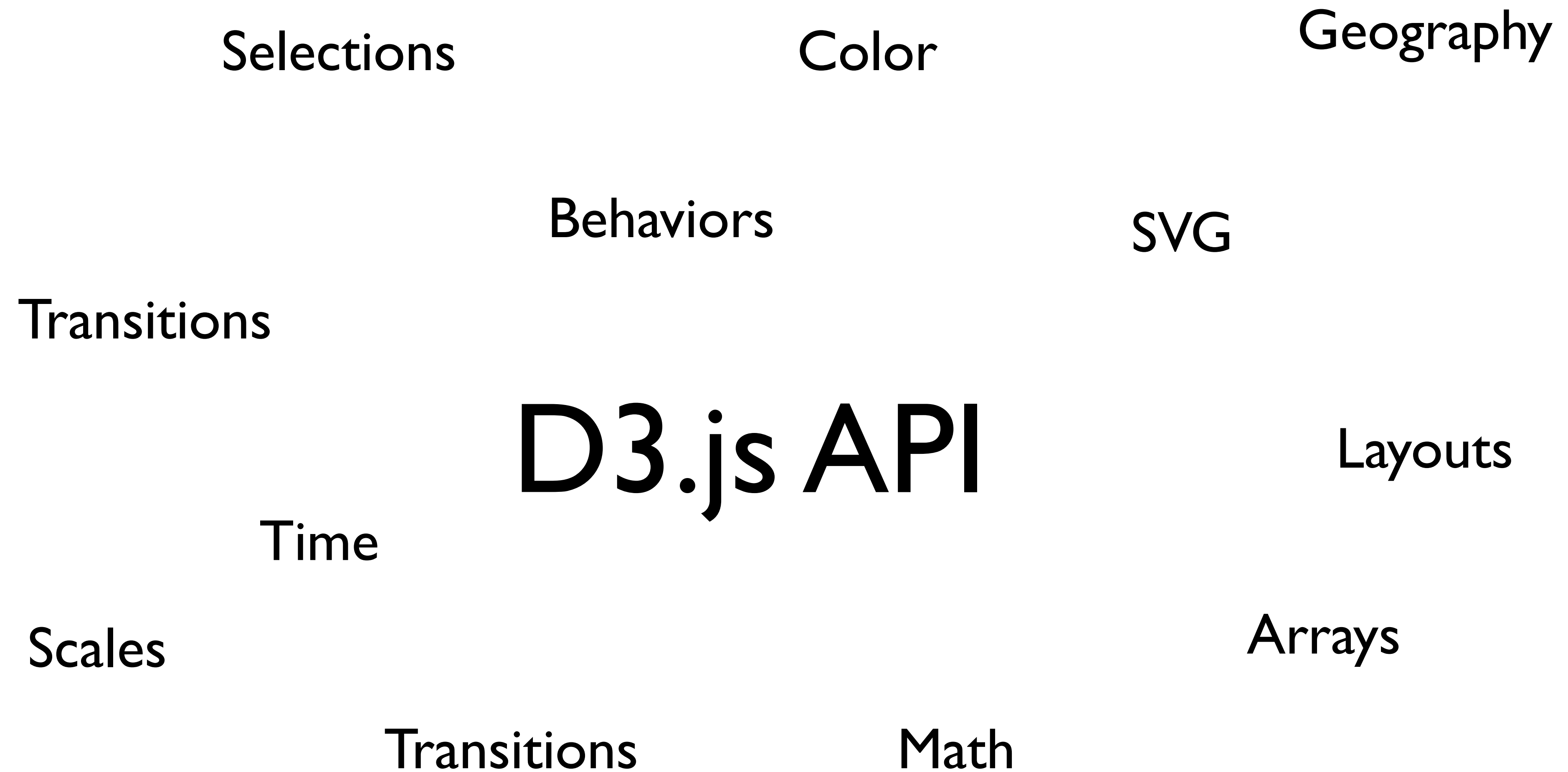


Bringer die Daten

```
var width = 600;  
var data = [4, 8, 15, 16, 23, 42];  
var x = d3.scale.linear()  
    .domain([0, d3.max(data)])  
    .range([0, width]);
```

Bringer die Daten

```
d3.select('.bar-chart')  
  .selectAll('div')  
  .data(data)  
  .enter().append('div')  
  .transition()  
  .duration(2000)  
  .style('opacity', 1)  
  ... // animiere Breite und Farbe
```

D3.js auf iOS

*“Any fool can write code that a computer can understand.
Good programmers write code that humans can
understand.”*

Martin Fowler

WKWebView

Seit iOS 8, UIWebView für ältere iOS

WebGL, Games und Seiten mit rechenintensivem JavaScript-Code

Nitro JavaScript Engine

Rendering-Performance

WKWebView

(Noch) kein IB-Komponent, programmatisch erstellen

Macht Auto-Layout schwieriger

Relativ wenig dokumentiert

Demo

WKWebView

Tipps und Tricks

Hammer.js:

Tap, Double-Tap, Press, Pan und Swipe für WebViews

rect vs. div:

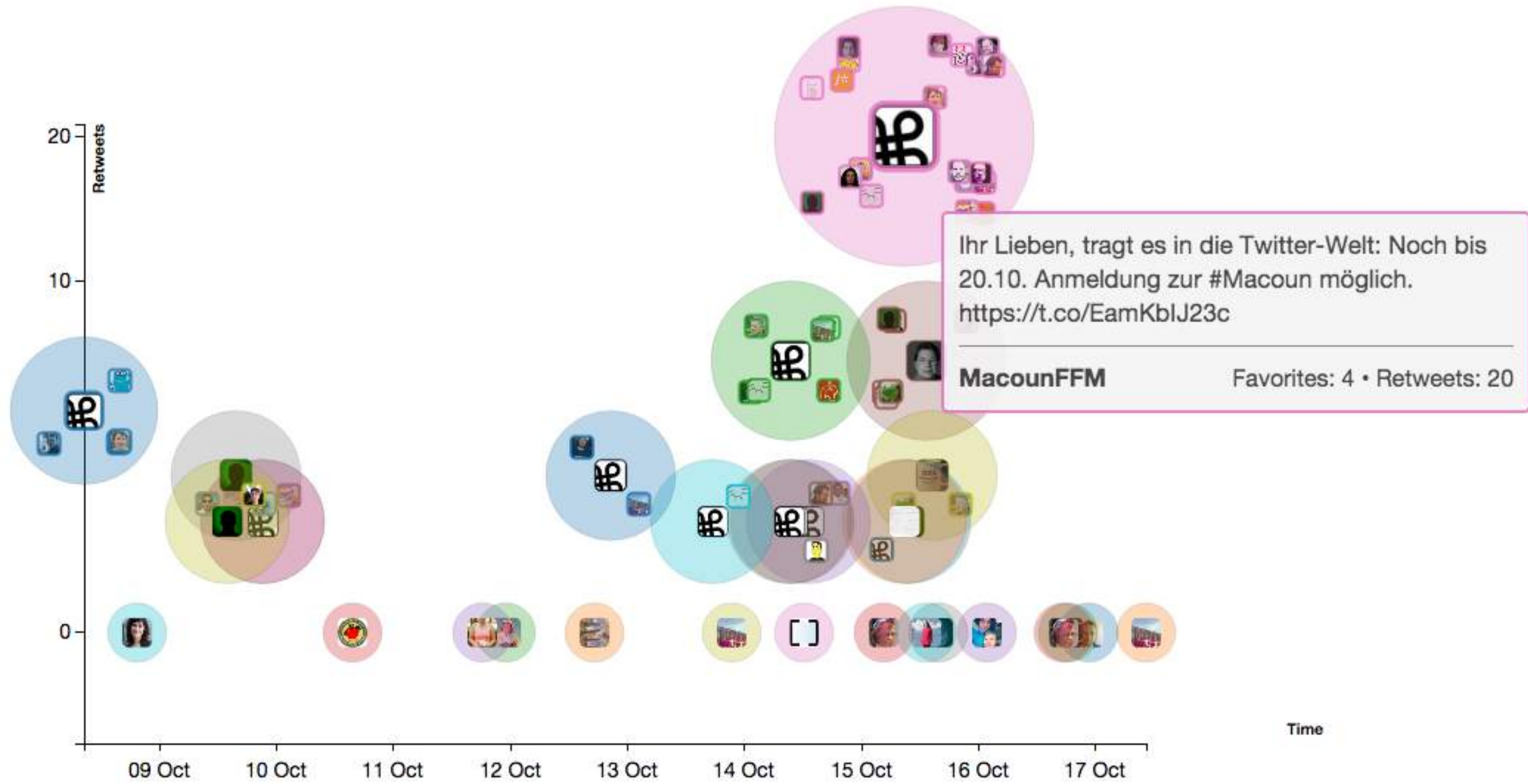
Performance-Verbesserung bei grossen Datenmengen

Fastclick.js:

Entfernt 300-ms-Verzögerung zwischen Tap- und Click-Event

Demo

Twitter visualisiert



Fazit

“Computer science education cannot make anybody an expert programmer any more than studying brushes and pigment can make somebody an expert painter.”

Eric S. Raymond

Fazit

“It always takes longer than you expect, even when you take into account Hofstadter's Law.”

Hofstadter's Law

Schlussfolgerungen

Daten visualisieren macht Spass!

Web-Komponenten im Zusammenspiel mit nativem Code können funktionieren, wenn sauber umgesetzt.

Kostenlose Ressourcen:

<http://www.d3js.org>

<https://leanpub.com/D3-Tips-and-Tricks>

<http://chimera.labs.oreilly.com/books/1230000000345/index.html>

Fragen?

“The fool wonders, the wise man asks.”

Benjamin Disraeli

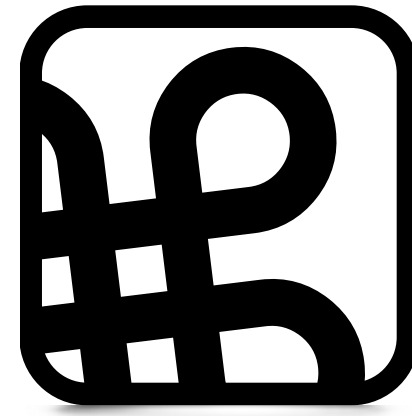


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Vielen Dank

“A computer is a stupid machine with the ability to do incredibly smart things, while computer programmers are smart people with the ability to do incredibly stupid things. They are, in short, a perfect match.”

Bill Bryson



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