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蚂蚁金服体验科技大会

AntV

返璞归真幻化万千可视化表达



ANT FINANCIAL EXPERIENCE



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@绝云 leungwensen

爱编程爱读书爱数据爱可视化
软狗，译者，AntV 小二



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为什么再造一个“Charts”？

The screenshot shows the GitHub search interface for the term 'chart'. At the top, there's a search bar with 'chart' entered, and navigation links for 'Pull requests', 'Issues', 'Marketplace', and 'Explore'. Below the search bar, statistics are shown: 'Repositories 35K', 'Code 38M', 'Commits 1M', 'Issues 315K', 'Wikis 37K', and 'Users 672'. The main results section shows '36,492 repository results' with a 'Sort: Most stars' dropdown. The top result is 'd3/d3', a JavaScript library for data visualization, with 70.6k stars. A 'visualization' tag is visible below the description. On the right, a 'Languages' sidebar lists: JavaScript (11,712), Java (3,115), HTML (2,885), Python (1,666), and PHP (1,180).

GitHub search results for **chart**

Repositories 35K Code 38M Commits 1M Issues 315K Wikis 37K Users 672

36,492 repository results Sort: Most stars

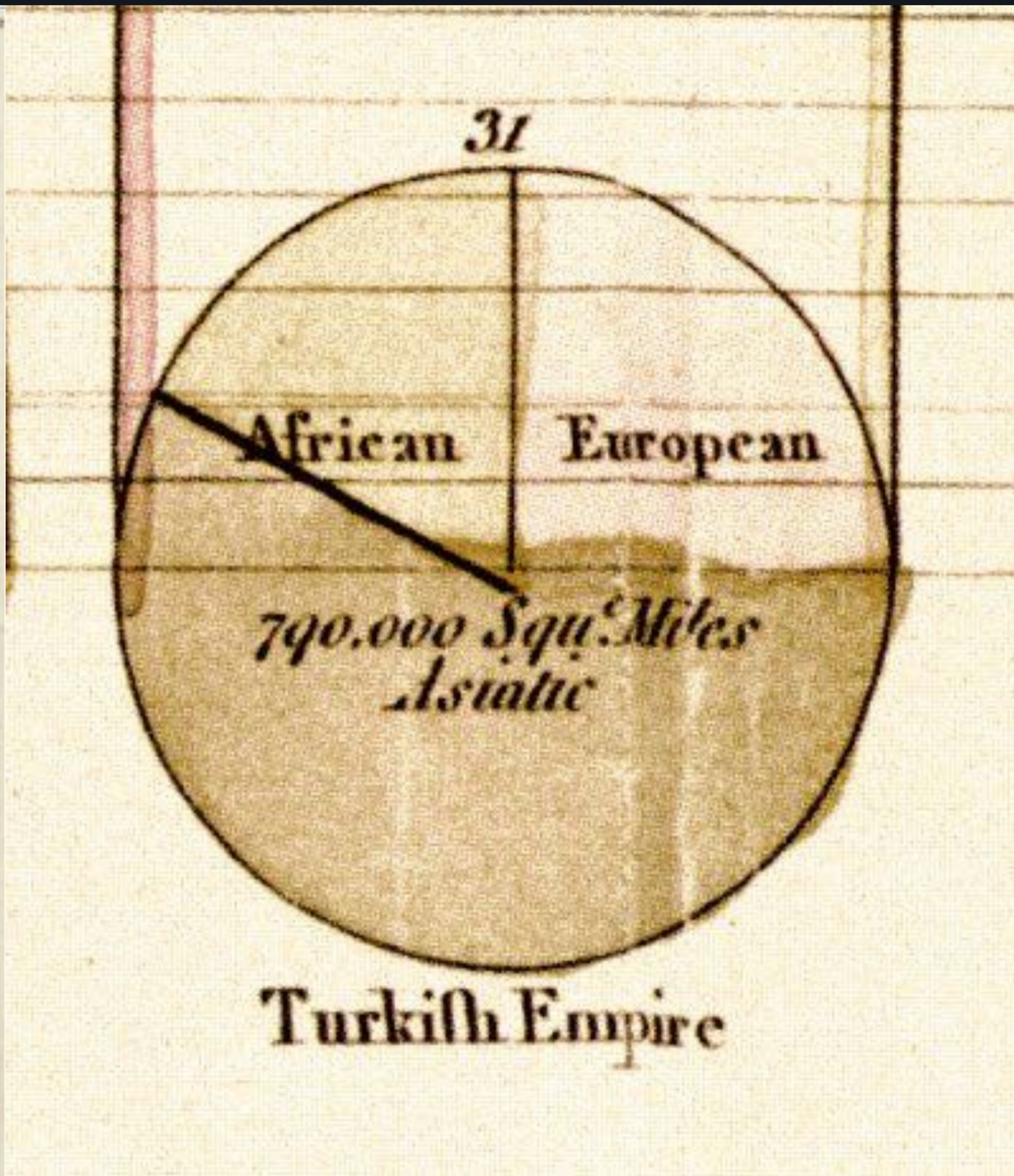
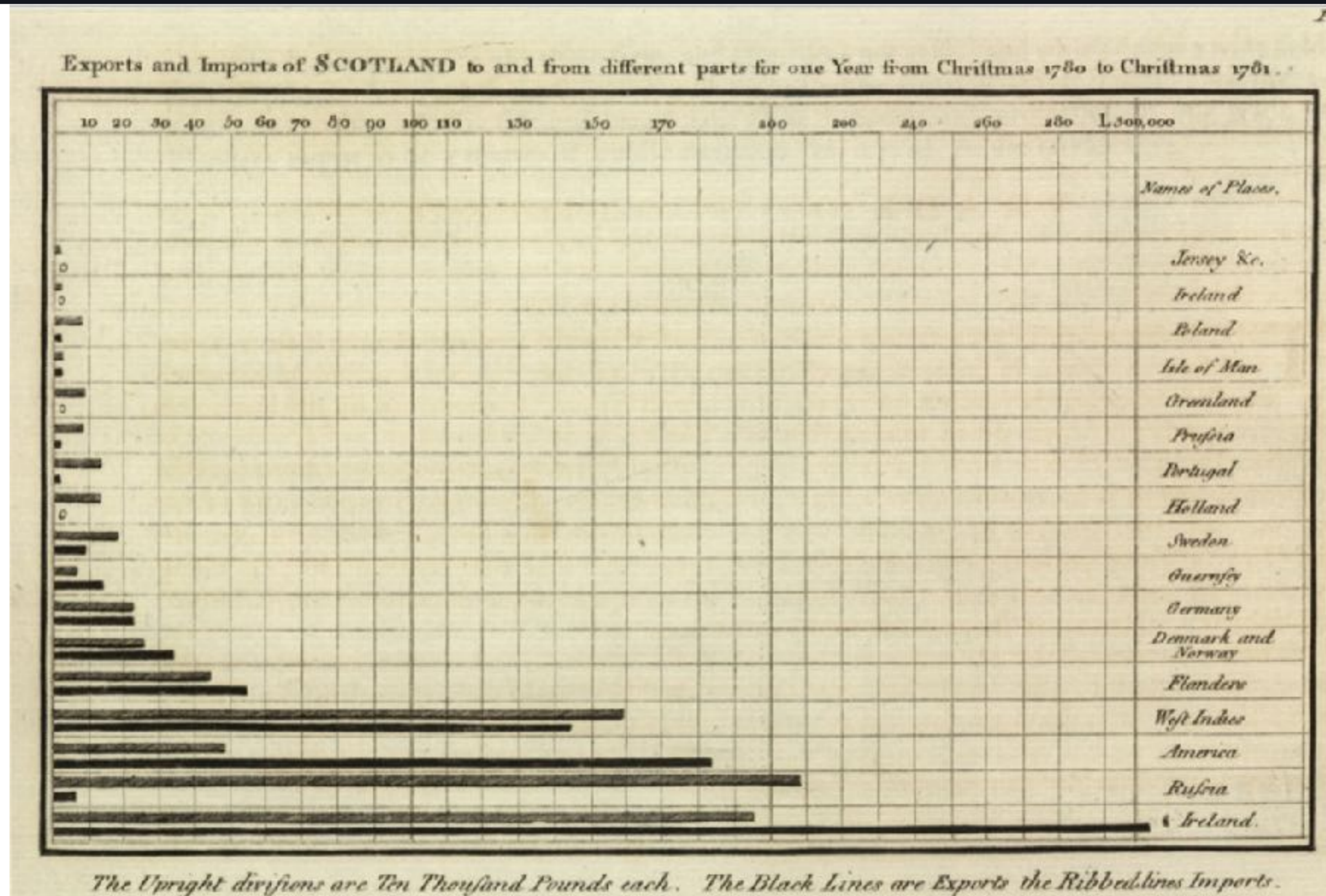
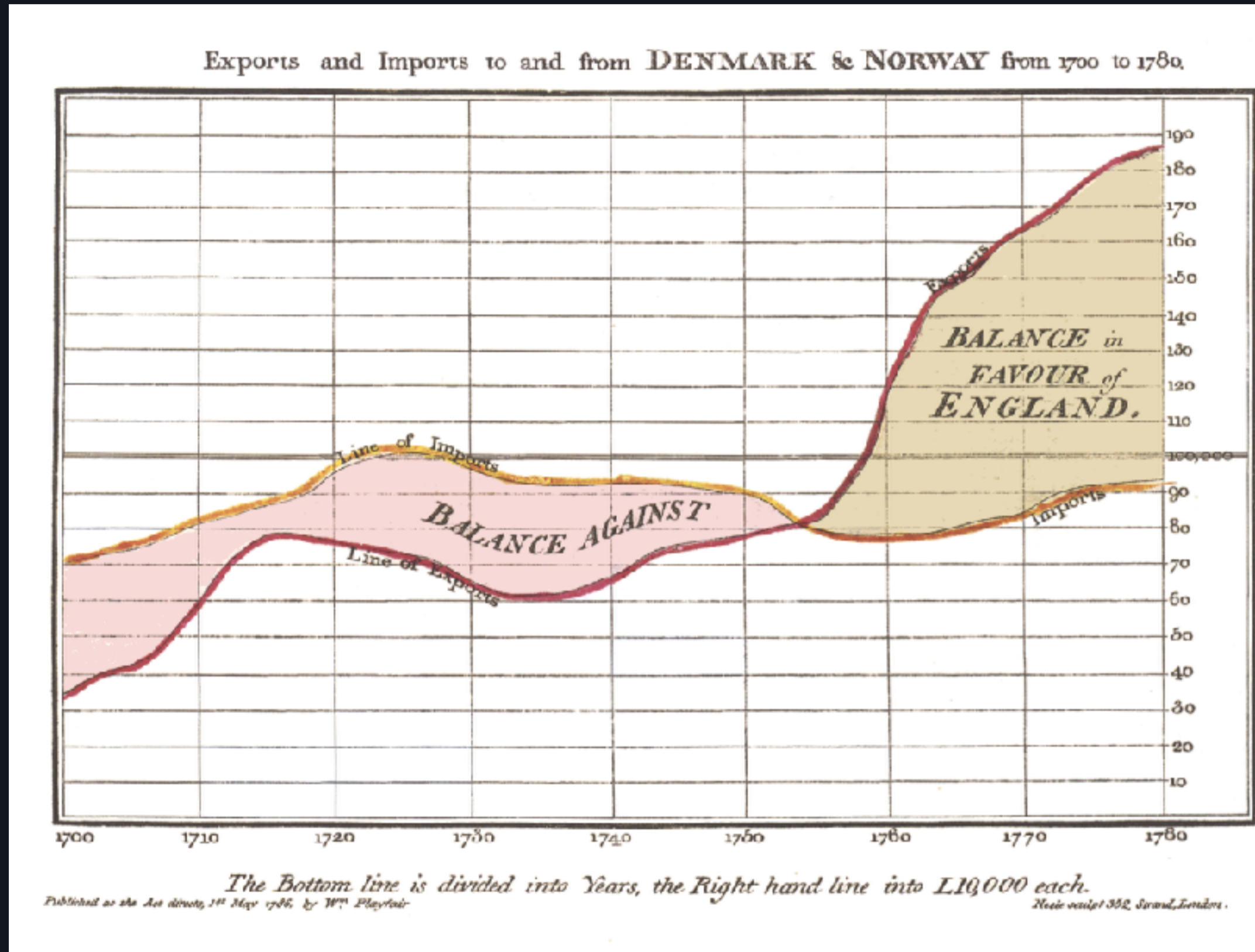
d3/d3 JavaScript ★ 70.6k

Bring data to life with SVG, Canvas and HTML.
:bar_chart::chart_with_upwards_trend:

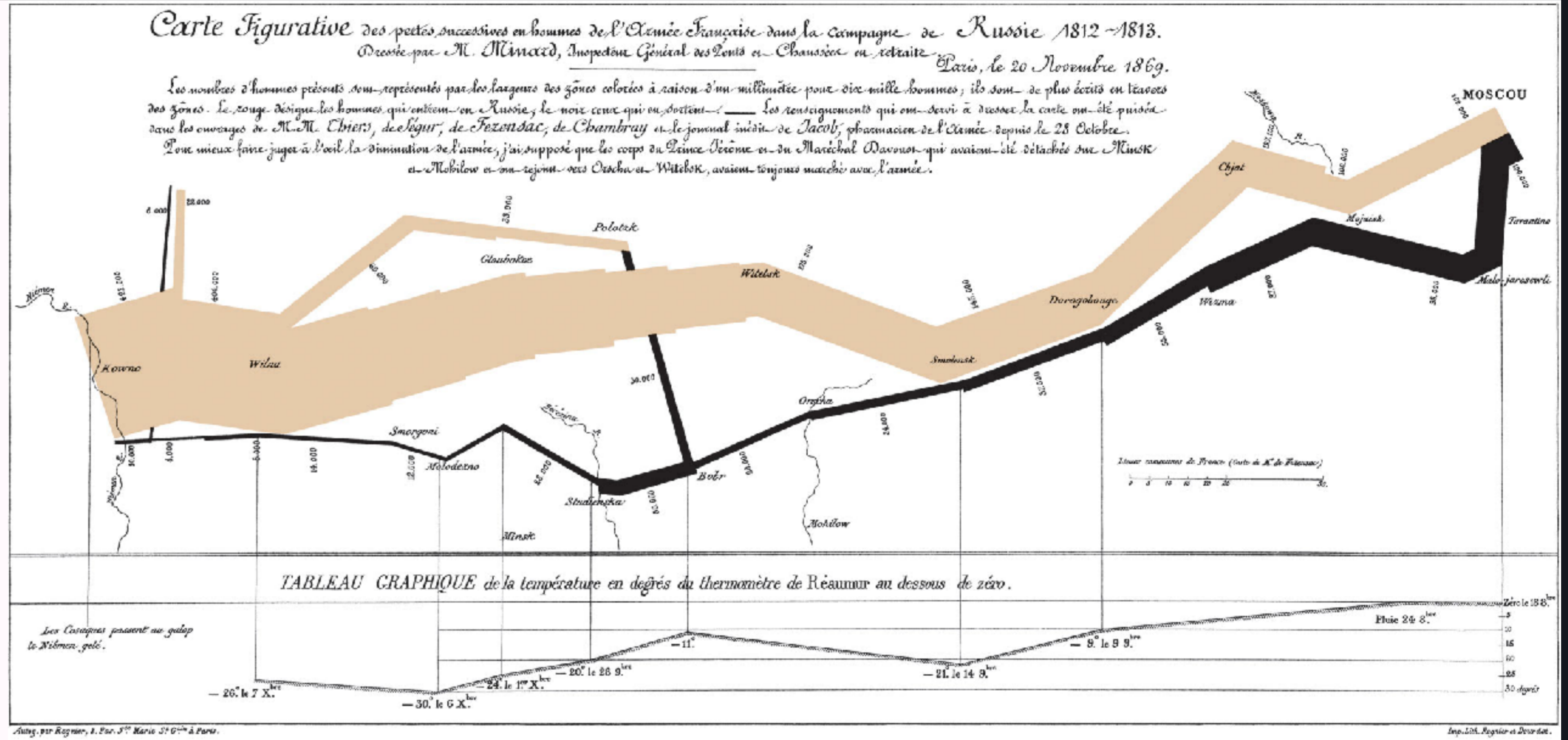
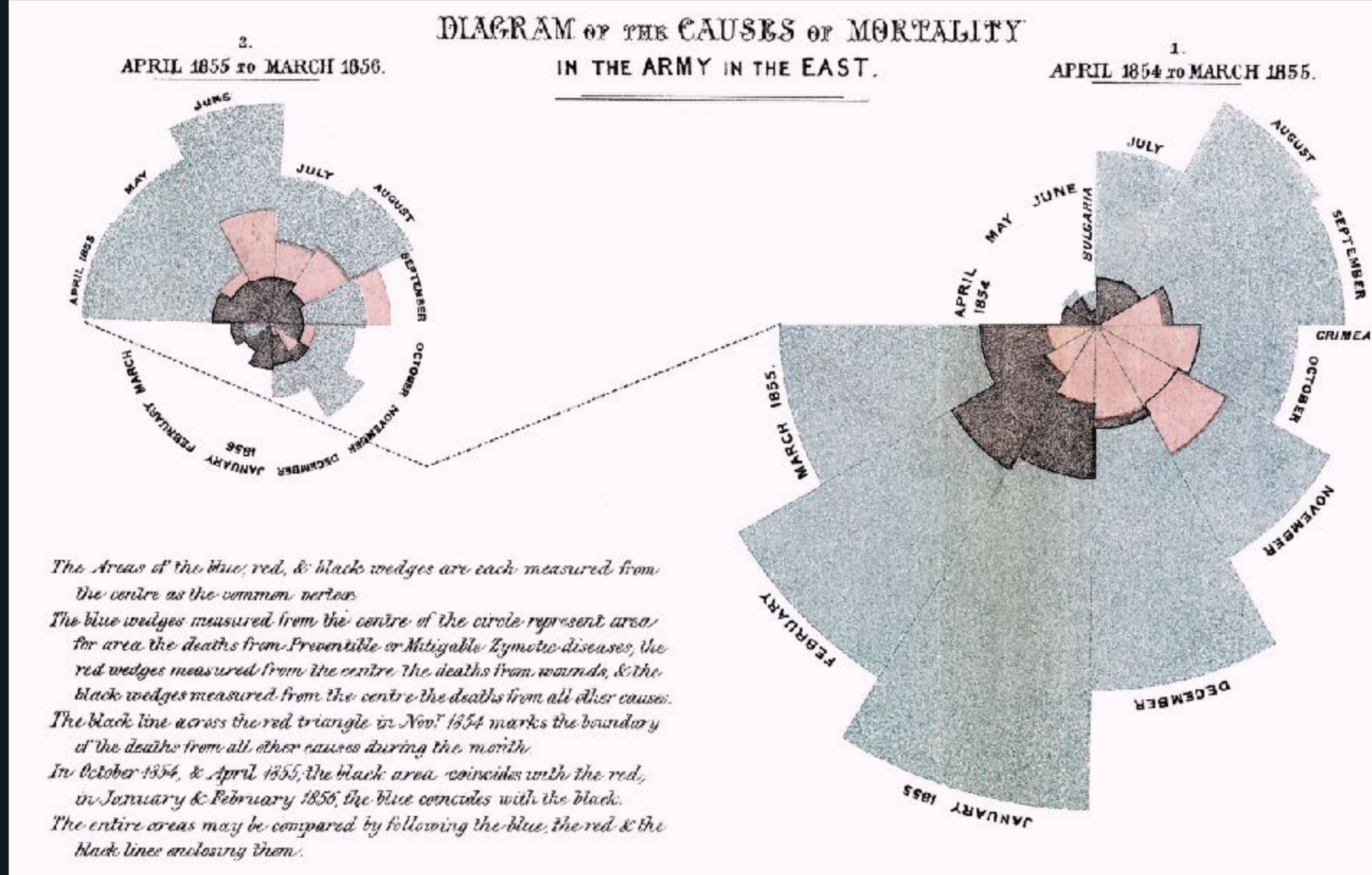
visualization

Languages

JavaScript	11,712
Java	3,115
HTML	2,885
Python	1,666
PHP	1,180



早在18世纪，William Playfair 就发明了线、柱、饼、面积图



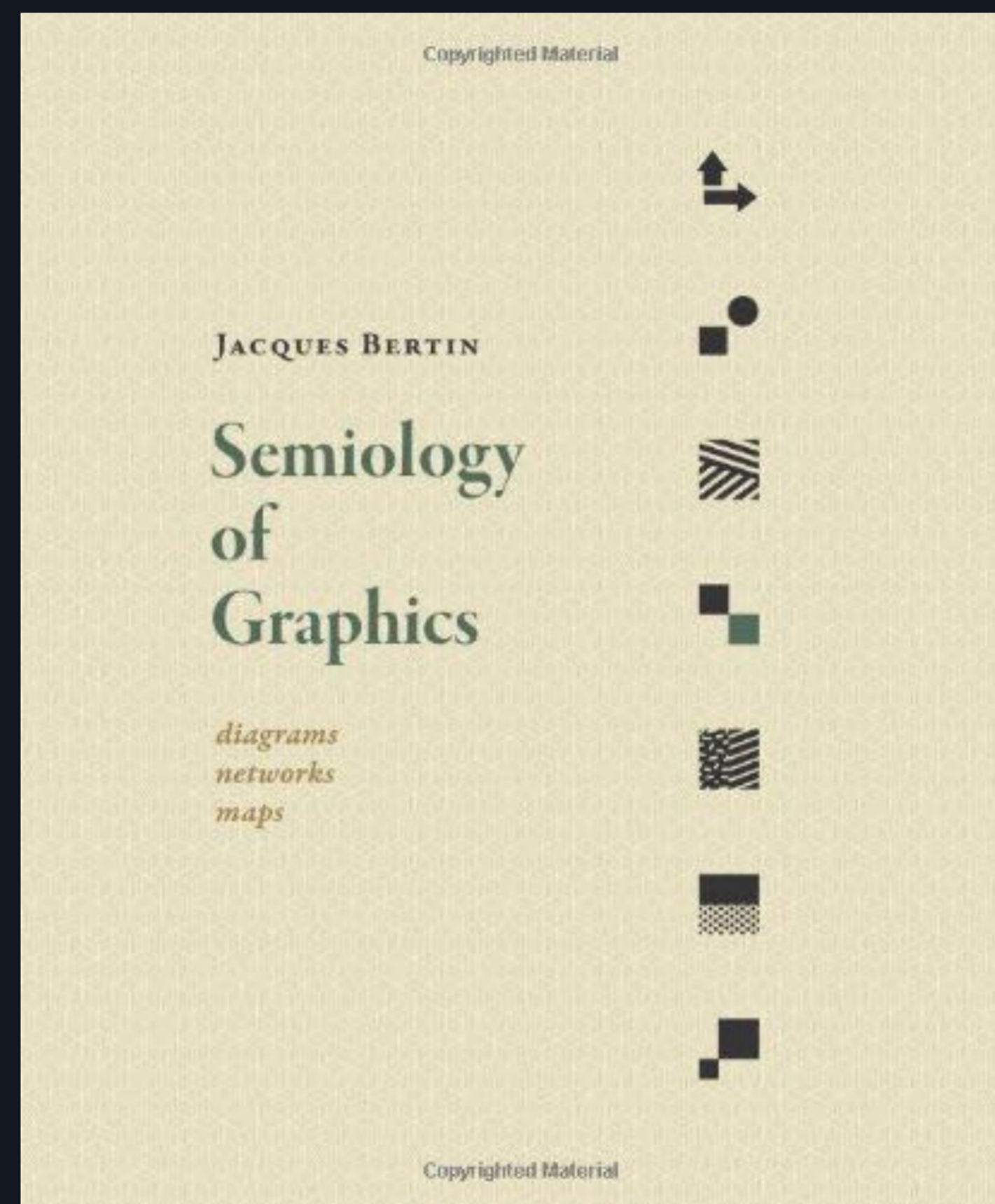
19世纪50年代“玫瑰图”

19世纪60年代“拿破仑东征图”

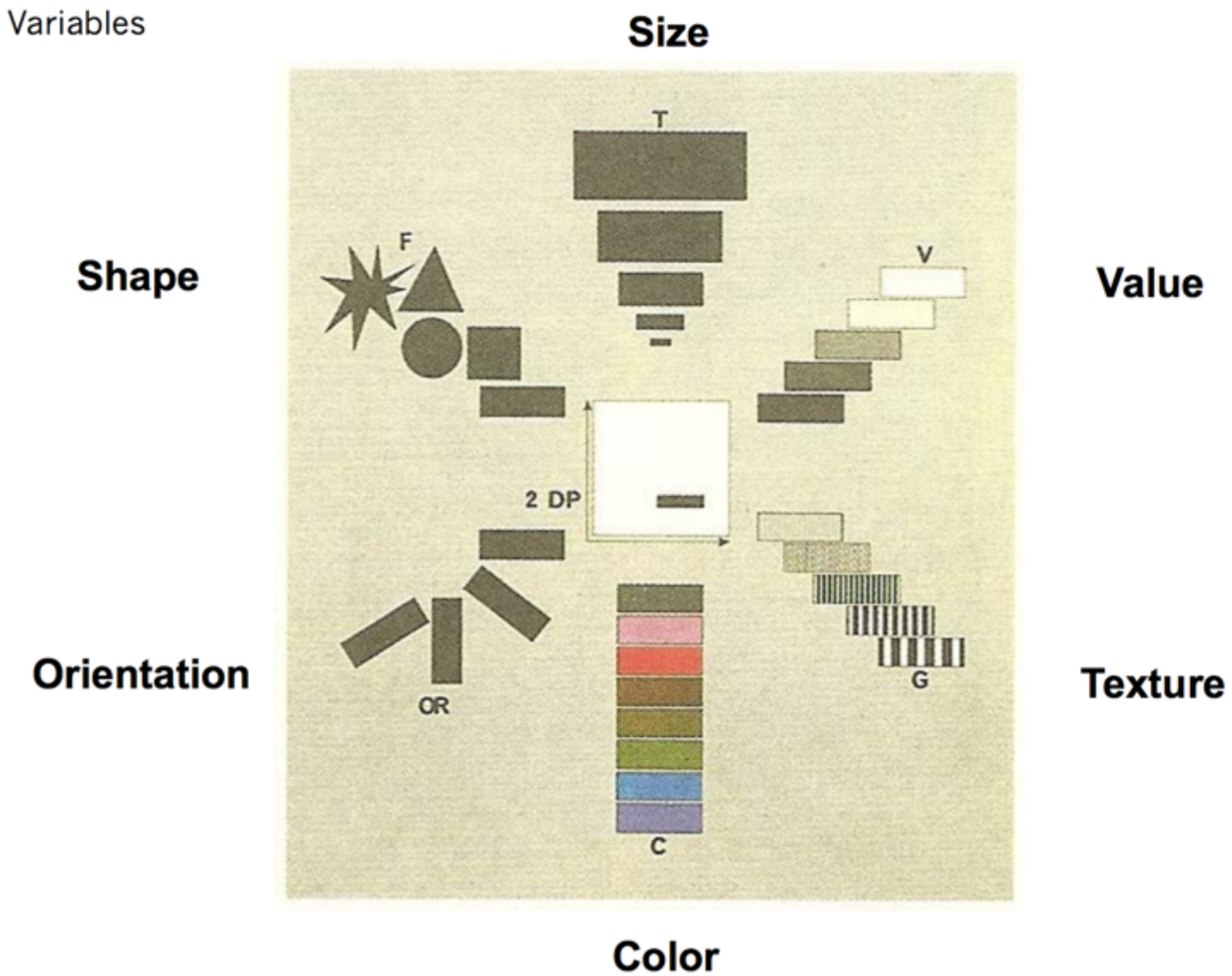
《the Semiology of Graphics》

1967 法国制图师 Jacques Bertin

可视化图表符号学的奠基之作



Retinal Variables





Leland Wilkinson

统计学家、计算机学家，H2O.ai 首席科学家，G2 项目顾问

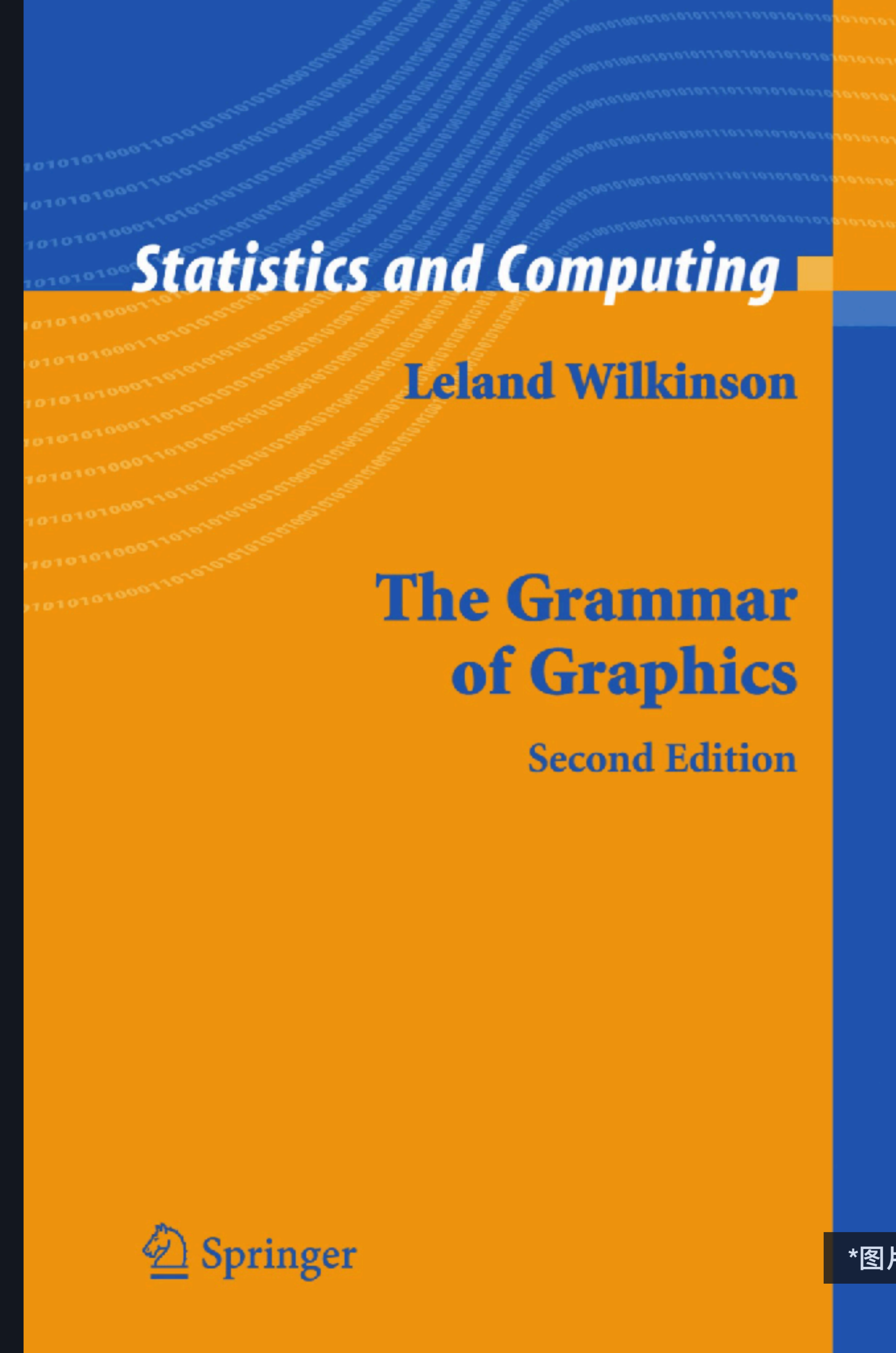
自上世纪80年代起开发统计图形软件，迭代逾十年

沉淀出 GPL (The Graphics Programming Language) 与 图形语法理论

《the Grammar of Graphics》

Leland Wilkinson 1999初版，2005再版

图形语法软件的理论依据和设计实践指导



“图形语法能让我们简洁地描述图形组件。这种语法能使我们超越命名图形（譬如散点图），更深入地理解统计图形的层次结构”

Hadley Wickham 2007





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G2 数据驱动的高交互图形语法



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用图形语法的 JavaScript 实现 G2 画饼图

```
const data = [  
  {k: '一', v: 40}, {k: '二', v: 21}, {k: '三', v: 17},  
  {k: '四', v: 13}, {k: '五', v: 9}  
]  
const dv = new DataSet.View().source(data) // 载入数据  
  .transform({  
    type: 'percent',  
    field: 'v',  
    dimension: 'k'  
  }) // 数据处理: 统计每一个 key 对应数值 value 占总和的比例  
  
const chart = new G2.Chart({ container: 'id' })  
chart.source(dv) // 载入数据  
chart.coord('polar').transpose() // 坐标转换  
chart.intervalStack() // interval 类型的 element, 做堆叠调整  
  .position('1*_percent') // 位置映射  
  .color('k') // 颜色映射  
chart.render() // 渲染图表
```




```
chart.coord('polar').transpose() // 极坐标系
```




```
chart.coord('rect') // 直角坐标系, 柱状图
```




```
chart.coord('rect').transpose() // 直角坐标系翻转, 条形图
```



```
chart.coord('polar') // 极坐标系映射到半径, 牛眼图
```




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G2 到底能画多少种图表?



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坐标变换 x 几何图形 x 数据调整 x 形状 x DataSet

4 种坐标
2 种变换

9 种

4 种

- Area 5 种
- Edge 3 种
- Heatmap 1 种
- Interval 6 种
- Line 7 种
- Path 1 种
- Point 22 种
- Polygon 1 种
- Schema 2 种

支持扩展
无数种数据处理
无数种图形布局

DataSet 与数据驱动

为什么需要 DataSet ?

保证数据格式统一

扩展数据处理和布局等

增强交互



Connector: 接入数据



```
import { csvParse } from 'd3-dsv'  
DataSet.registerConnector('csv', str => csvParse(str))
```

```
new DataSet.View().source(csvStr, { type: 'csv' })
```

```
name, age  
kelly,28  
kate,25
```

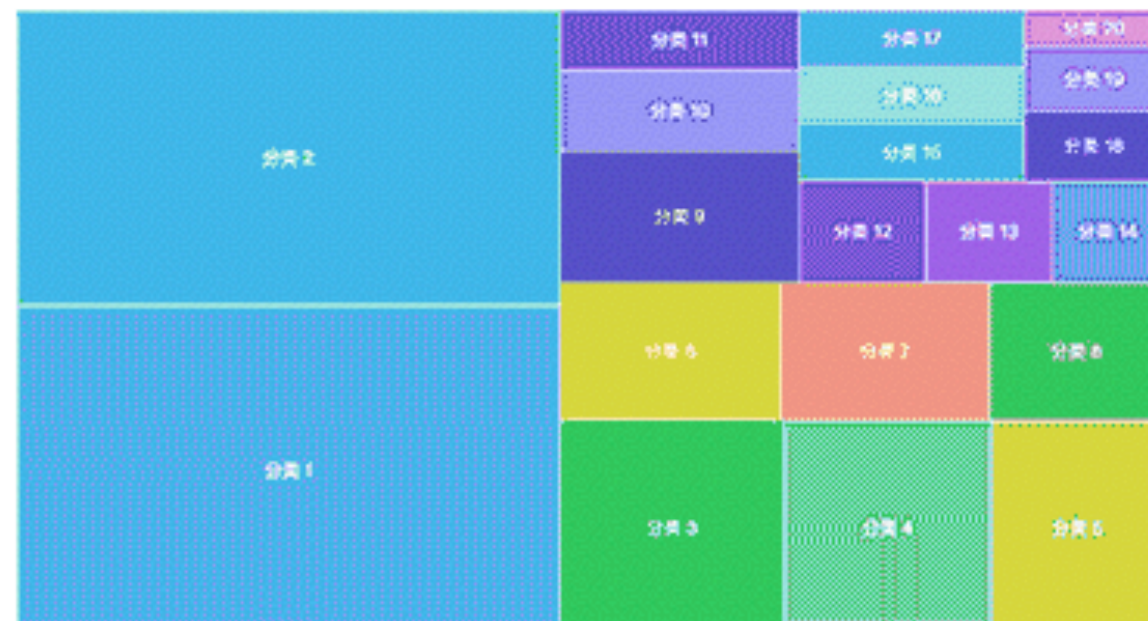
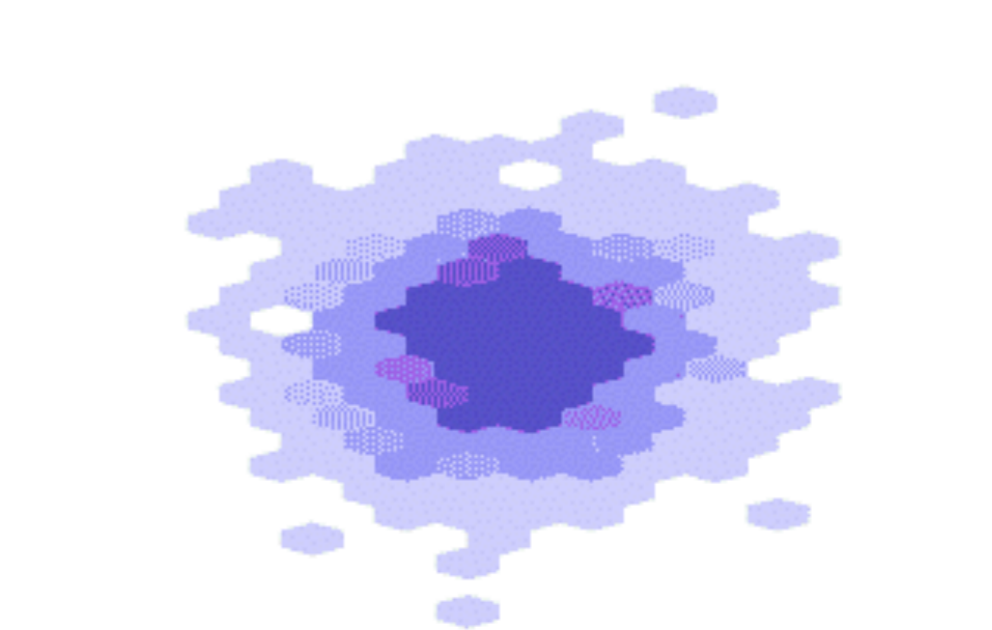
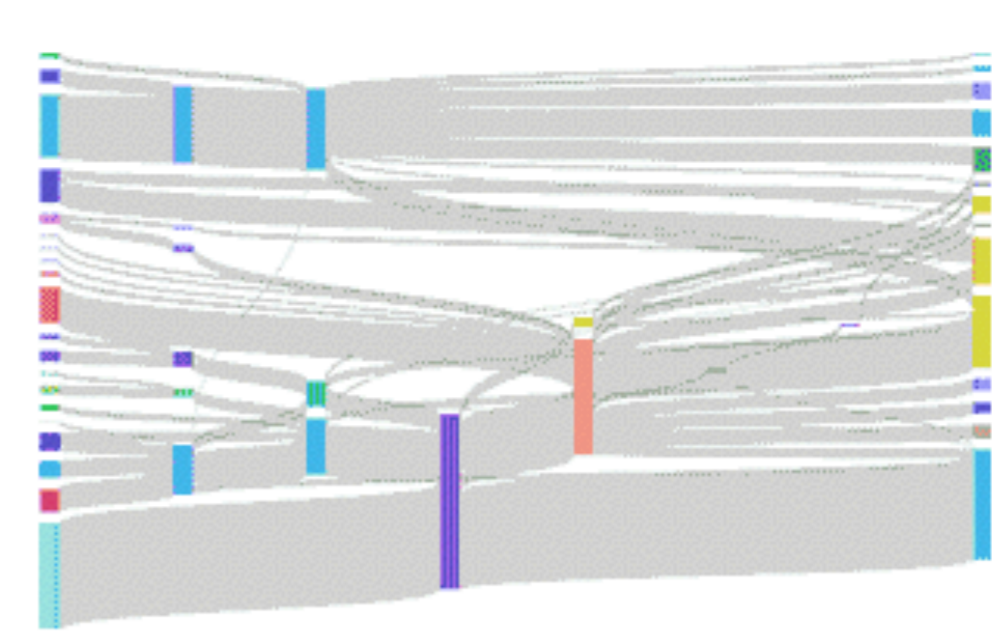
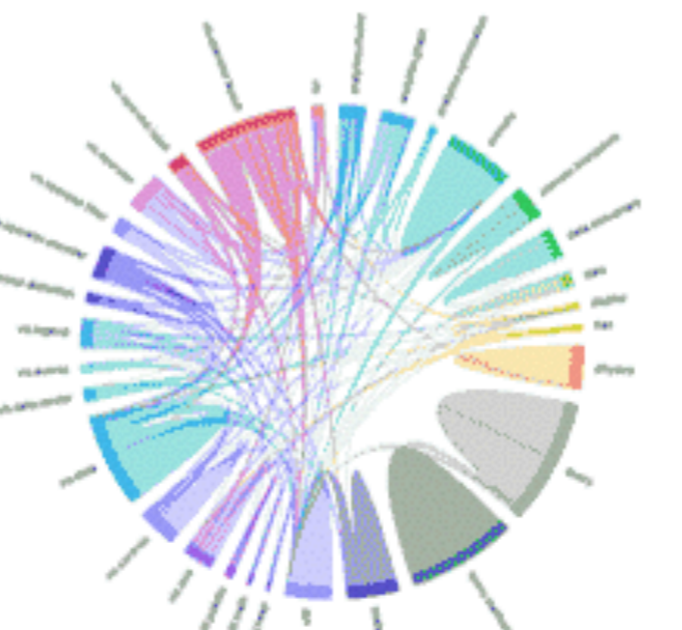
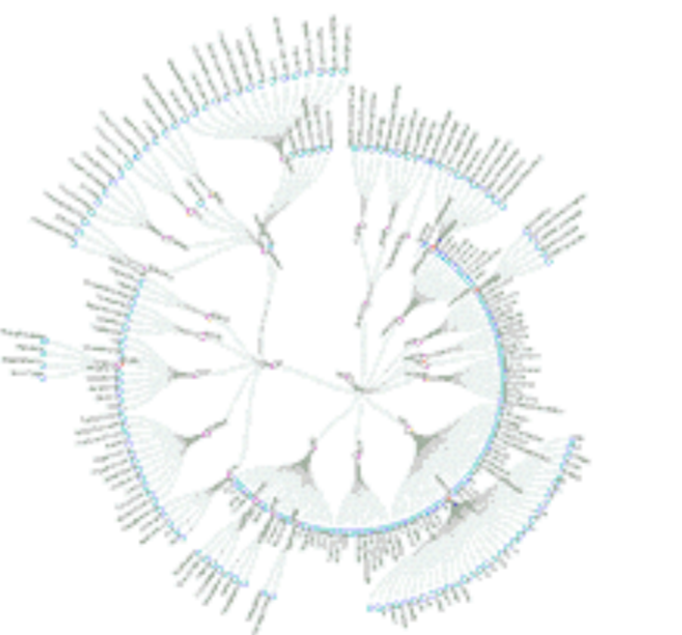
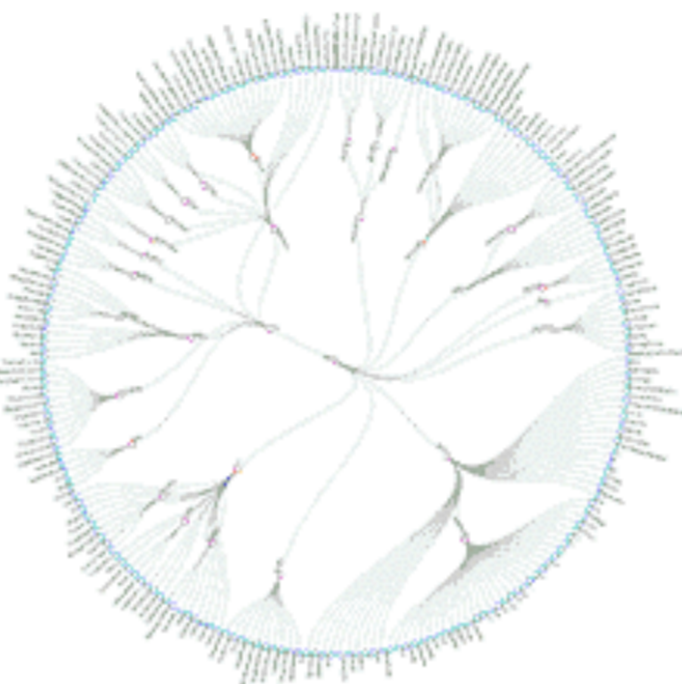
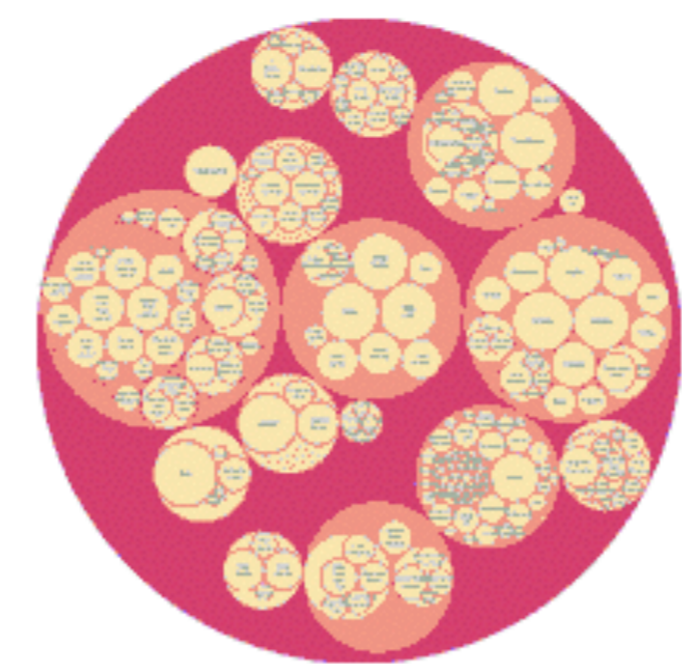
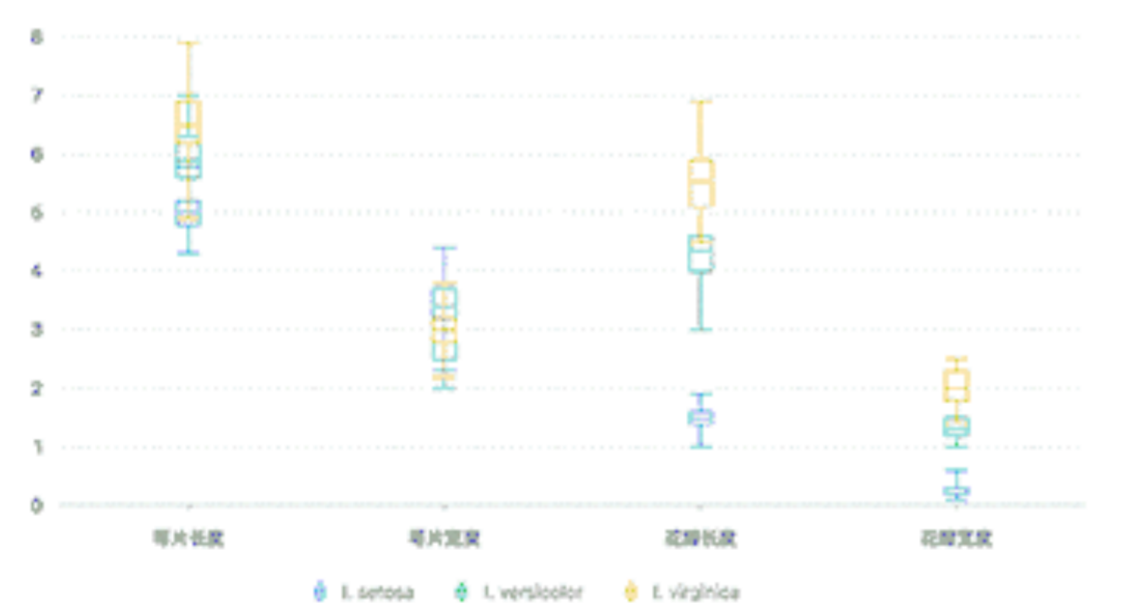
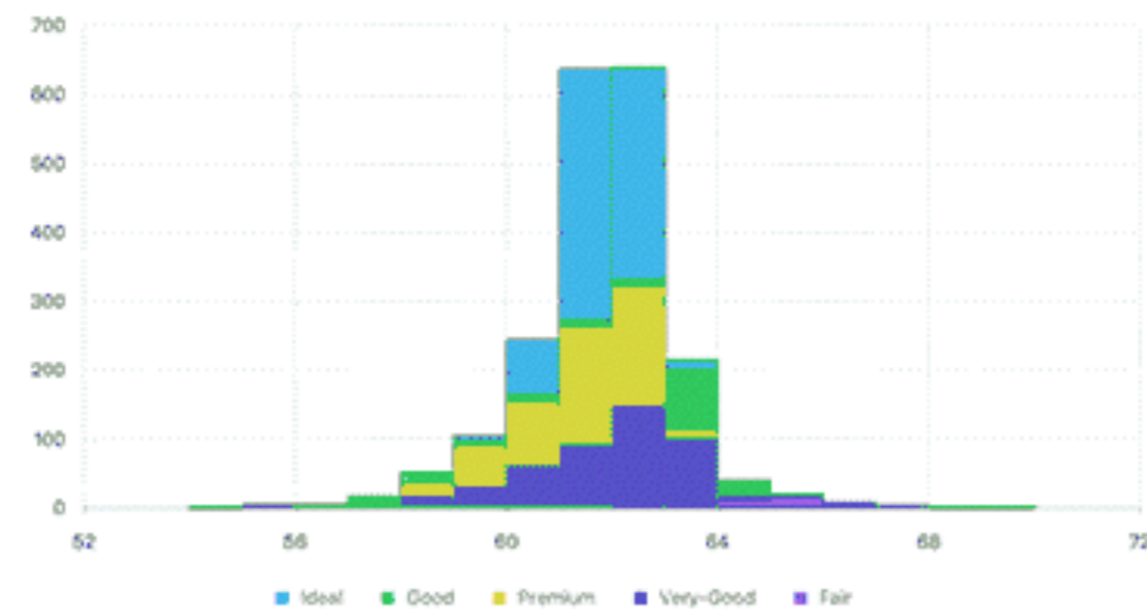


```
[  
  {  
    name: 'kelly',  
    age: 28  
  },  
  {  
    name: 'kate',  
    age: 25  
  }  
]
```


Transform: 处理数据

数据补全 / 转换, 分箱, 布局, 统计等等


```
dv.transform({
  type: 'xxx'
  // ...
})
```





d3-voronoi point-at-length
 d3-path iconv-lite
 d3-geo d3-dsv
 lodash commander rw
 d3-hierarchy
 d3-geo-projection
 d3-composite-projections
 antv/data-set abs-svg-path
 d3-collection
 d3-sankey isarray
 parse-svg-path
 regression
 wolffy87-eventemitter
 topojson-client

State: 更大的交互可能性

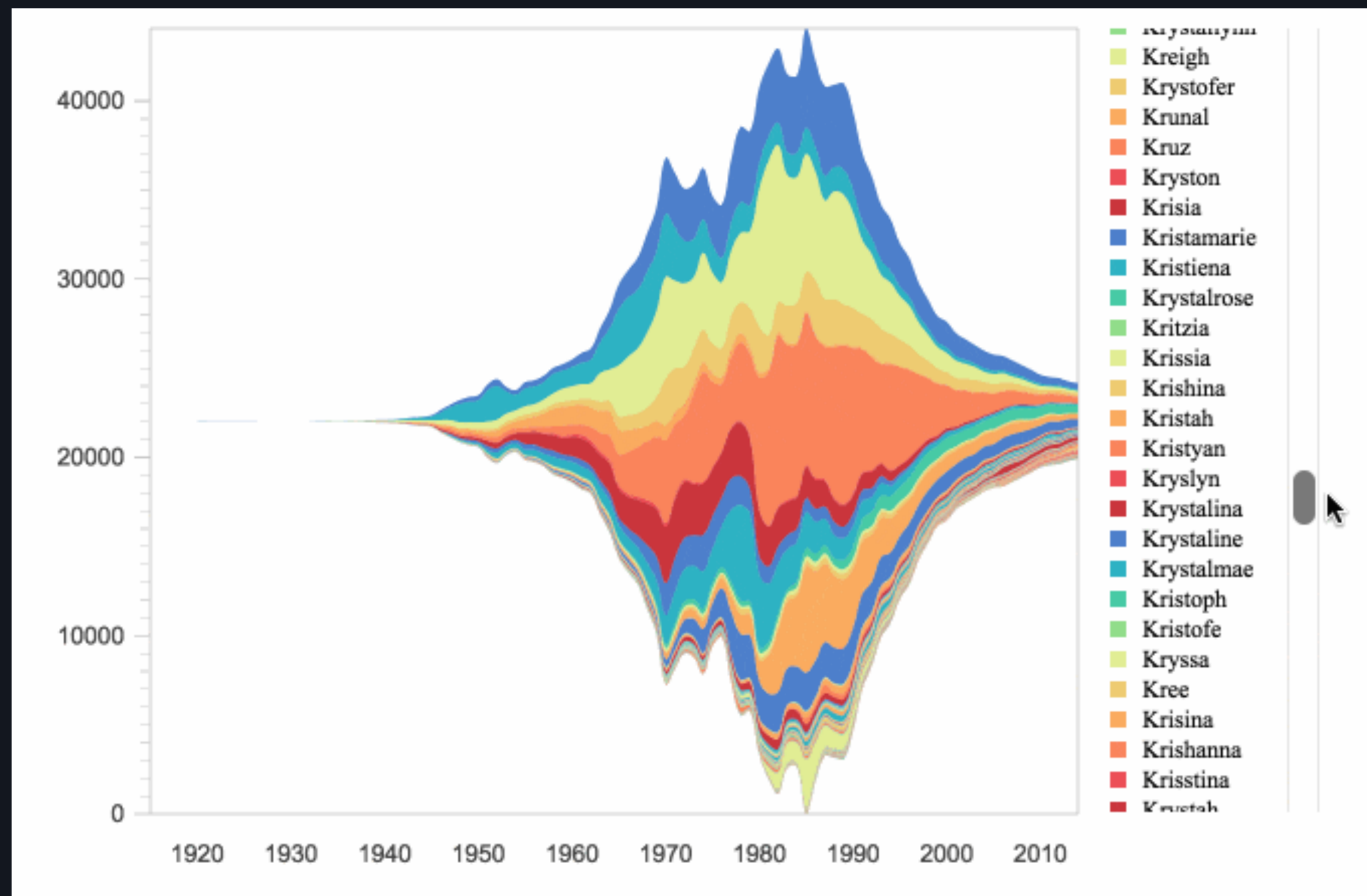


state 和 g2-plugin-slider 实现股票图联动

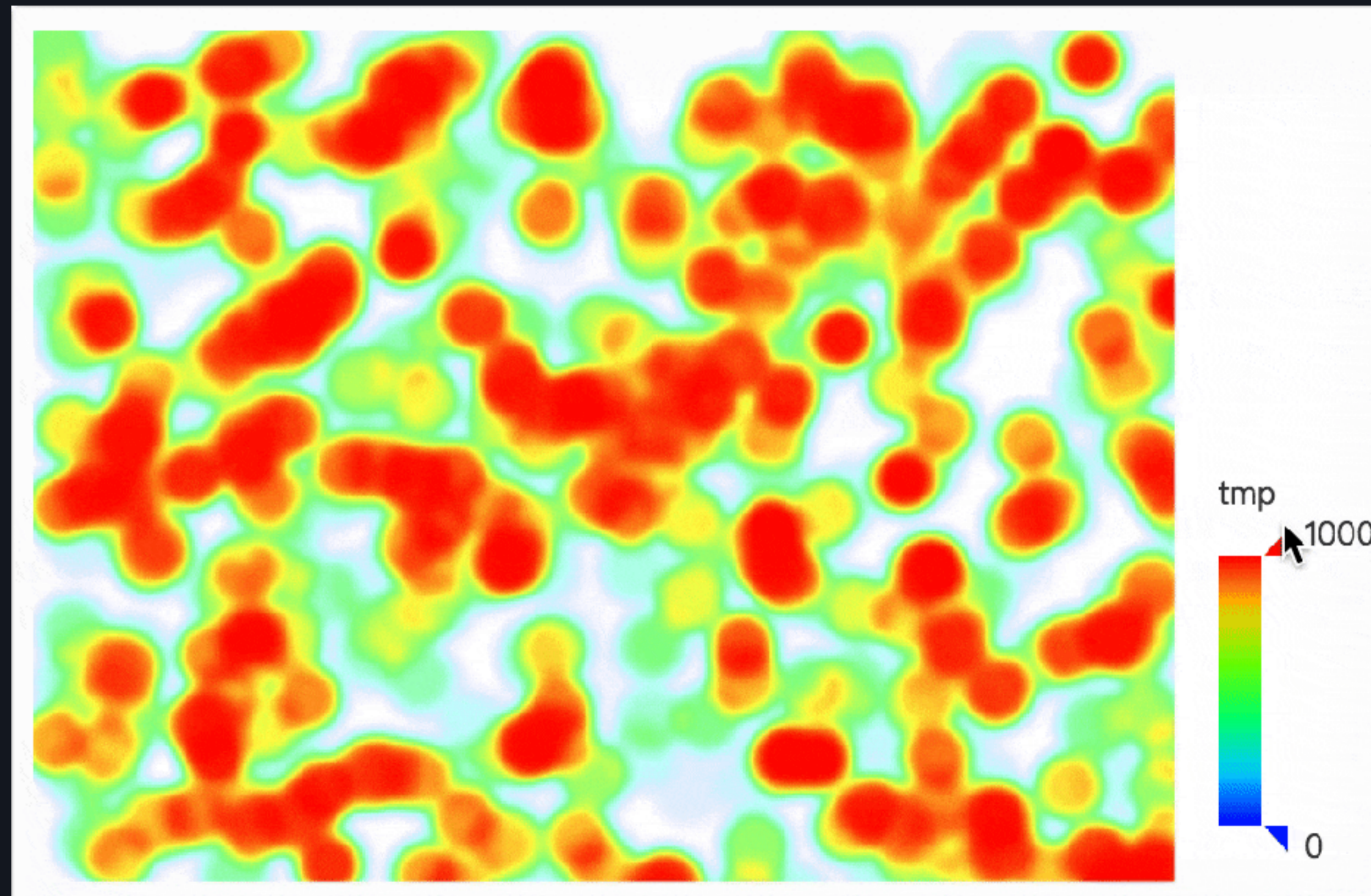
```
const ds = new DataSet({
  state: {
    start: '2015-04-07',
    end: '2015-07-28'
  }
})
const dv = ds.createView().source(data)
  .transform({
    type: 'filter',
    callback: obj => {
      const date = obj.time
      return date <= ds.state.end && date >= ds.state.start
    }
  })
const slider = new Slider({
  onChange({ start, end }) {
    ds.setState('start', start);
    ds.setState('end', end);
  }
})
```

高交互可视化方案

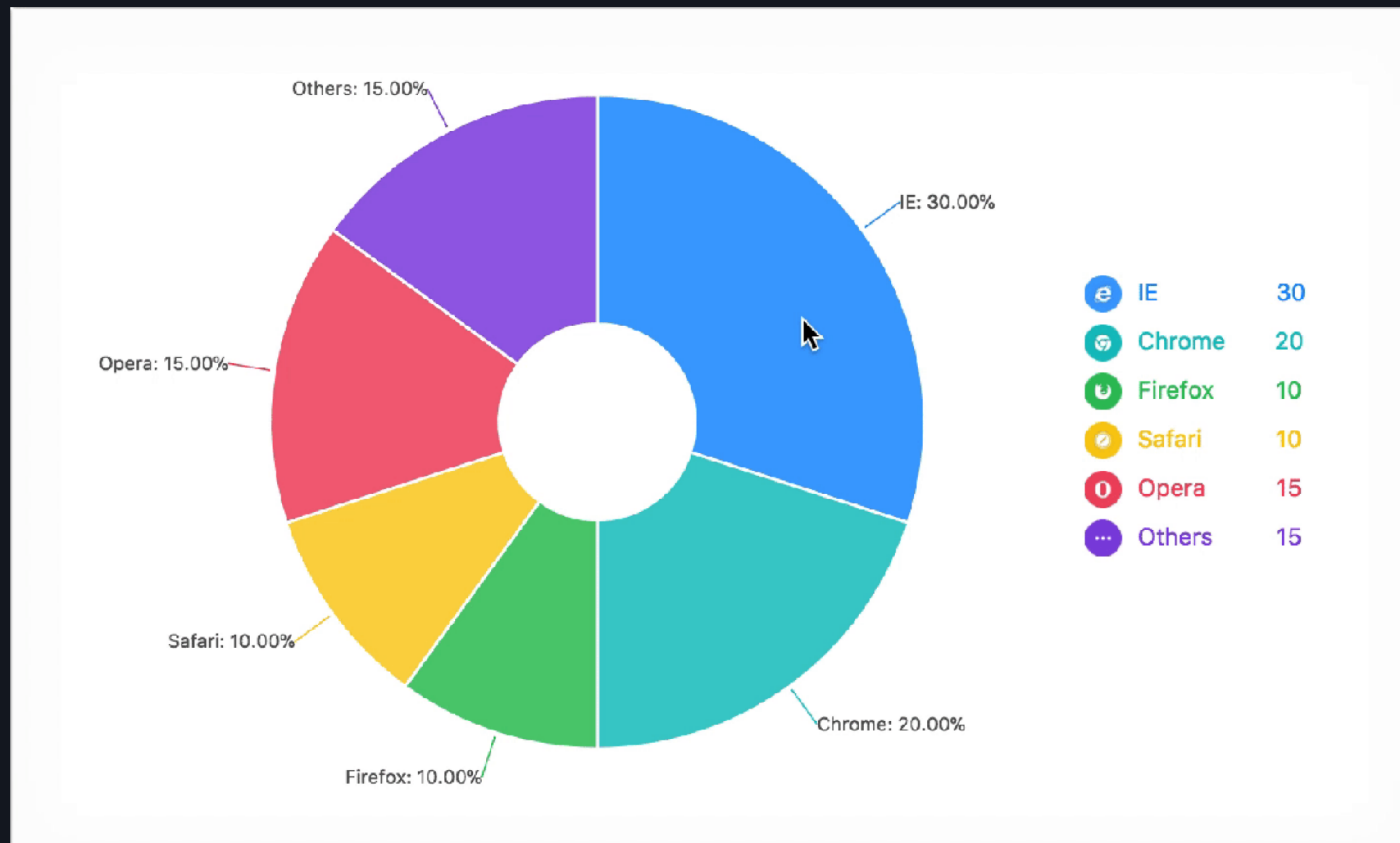
高速渲染、即时响应



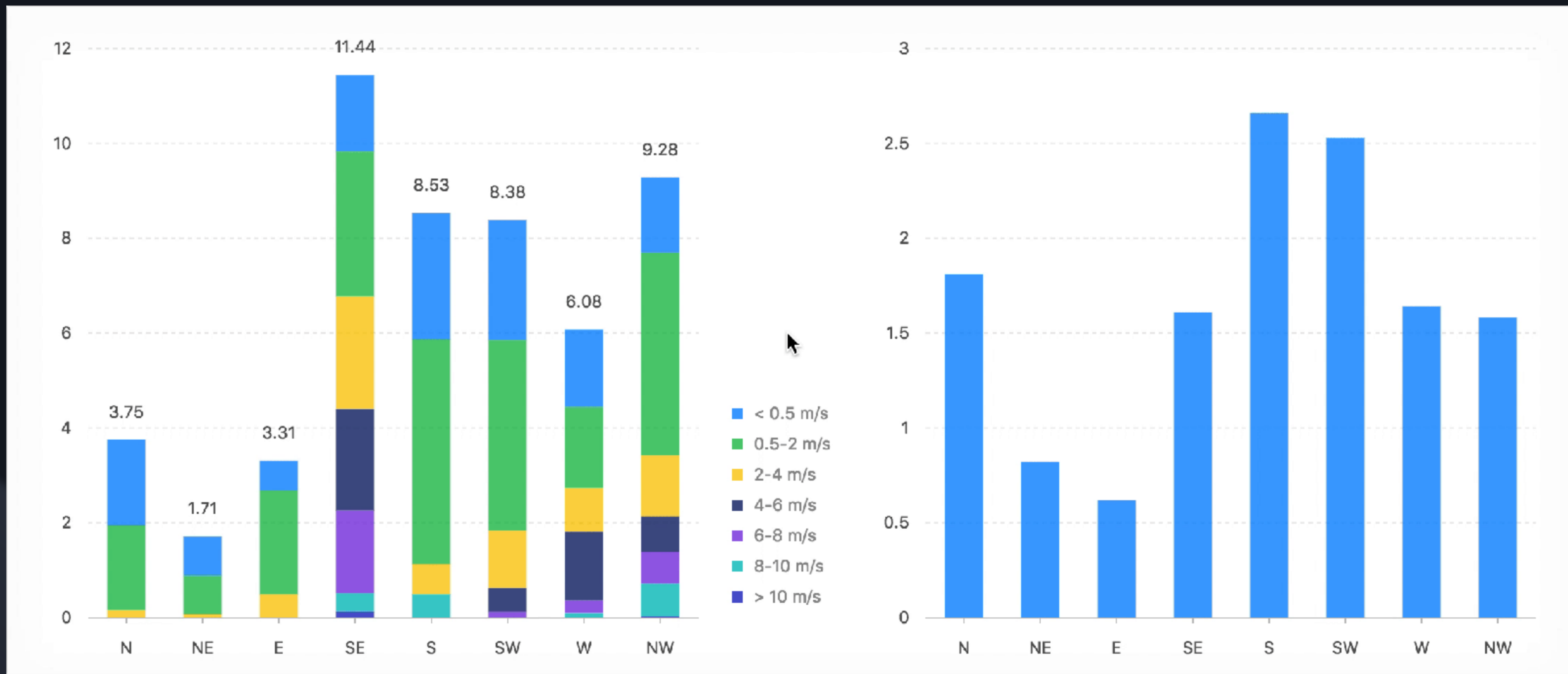
Stream graph, 25K 数据量



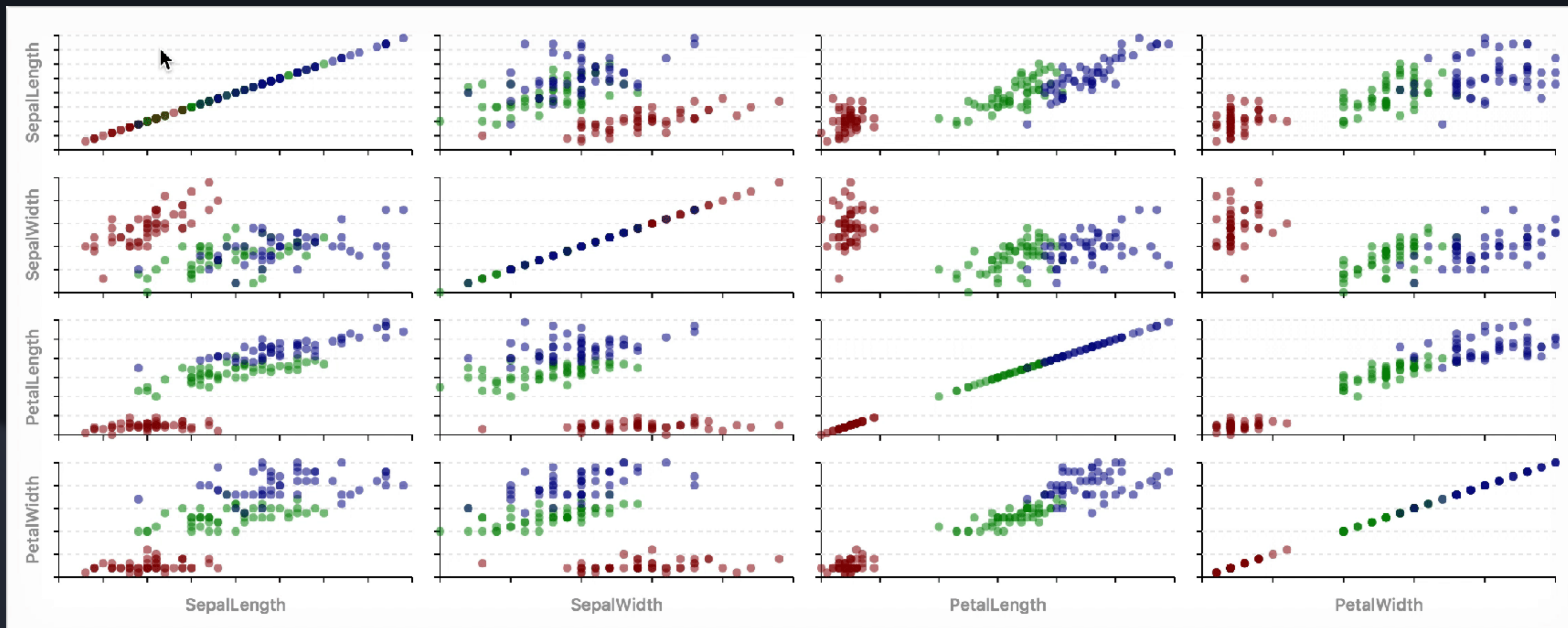
Heatmap 连续图例过滤, 0.5K 数据量, 900x600像素点



HTML 定制的 tooltip 和 legend



legend-item:mouseenter 事件和 DataSet 的状态量结合



g2-brush 矩形选框结合分面

G2 上层封装



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BizCharts

支持 React

<https://github.com/alibaba/BizCharts>

Viser

支持 React & Vue & Angular

<https://github.com/viserjs/viser>



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AntV

让数据栩栩如生

Liven Data Lively

- G2
- G6
- F2
- 墨者学院



让数据栩栩如生

AntV 是蚂蚁金服全新一代数据可视化解决方案，致力于提供一套简单方便、专业可靠、无限可能的数据可视化最佳实践。

开始使用

G2



G2 是以数据驱动，具有高度的易用性和扩展性的可视化图形语法。

G6



G6 是一套便捷、动态和富有交互的流程图和关系分析的图表库。

F2



F2 是一套精简、高性能、易扩展的移动端图表库。



@Kener-林峰

爱编程，爱设计，爱旅游，爱美食~

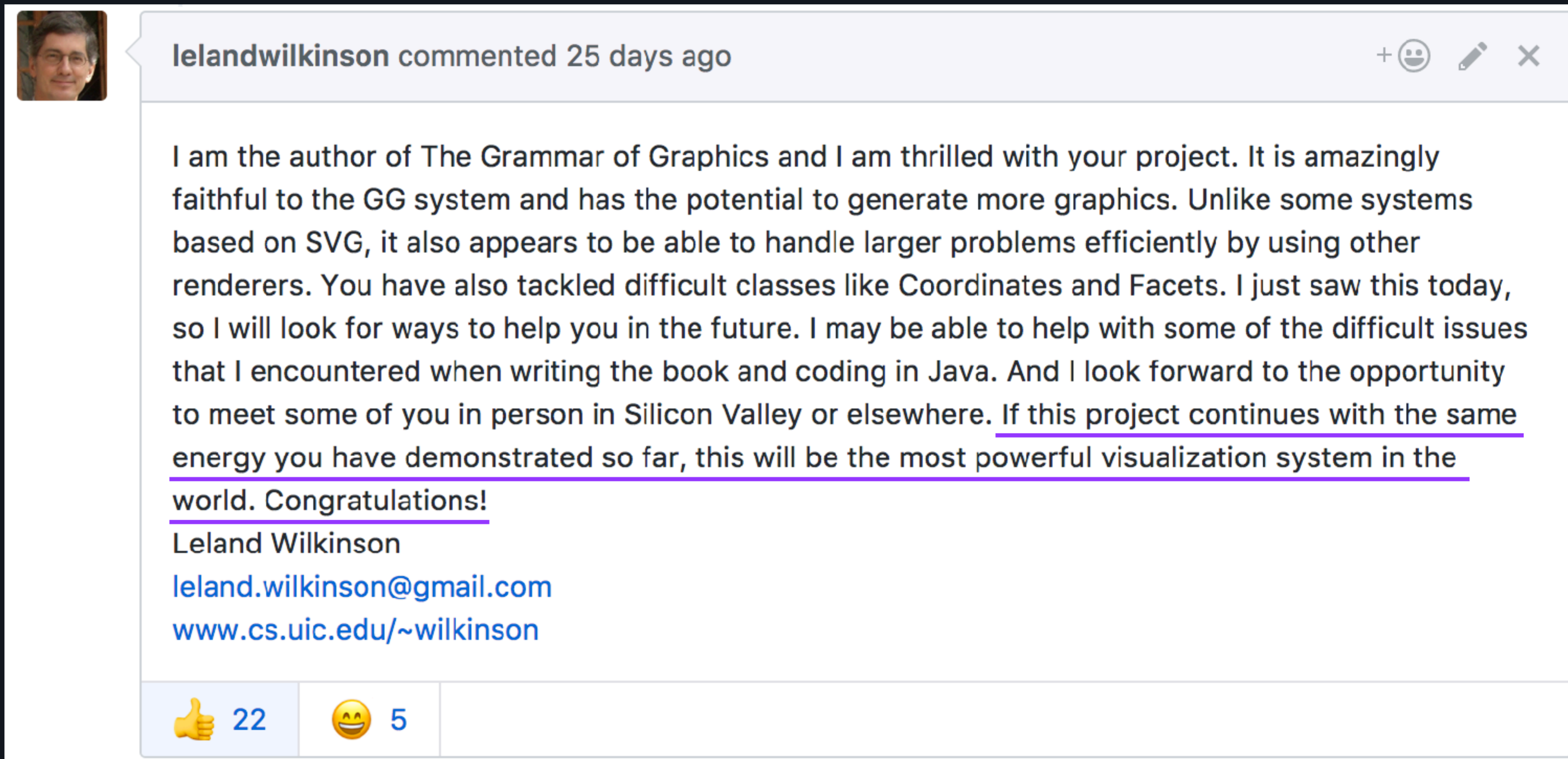
ECharts 作者，**AntV** 掌柜，阿里可视化社群搭台工

Why G2 ?

走在通往 NB 的路上?

Why G2 ?

走在通往 NB 的路上?

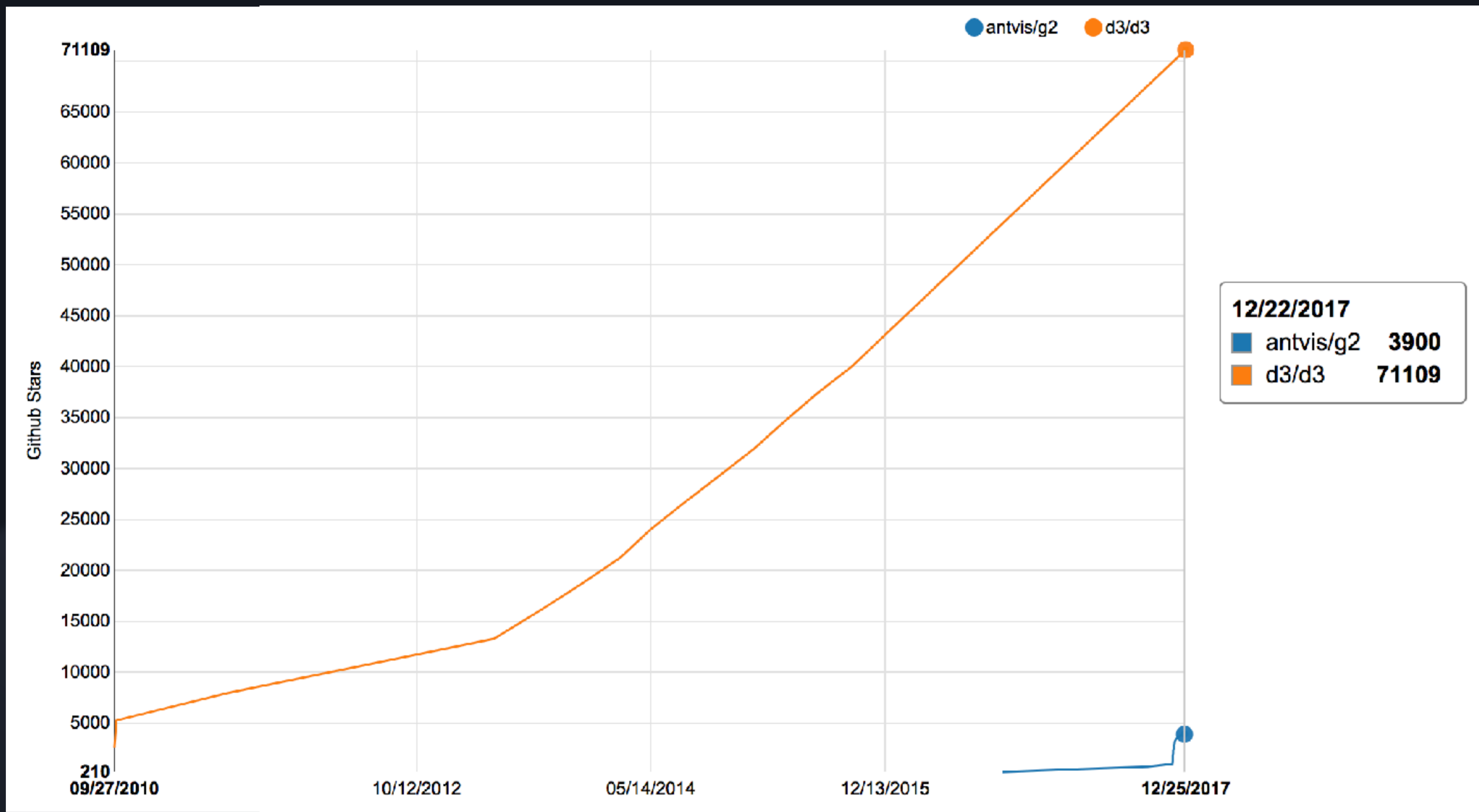


A screenshot of a comment from Leland Wilkinson, posted 25 days ago. The comment is displayed in a white box with a light gray border. At the top left of the comment box is a small profile picture of Leland Wilkinson. To the right of the profile picture, the text "lelandwilkinson commented 25 days ago" is displayed. In the top right corner of the comment box, there are three icons: a plus sign, a smiley face, and a close button (X). The main text of the comment is as follows: "I am the author of The Grammar of Graphics and I am thrilled with your project. It is amazingly faithful to the GG system and has the potential to generate more graphics. Unlike some systems based on SVG, it also appears to be able to handle larger problems efficiently by using other renderers. You have also tackled difficult classes like Coordinates and Facets. I just saw this today, so I will look for ways to help you in the future. I may be able to help with some of the difficult issues that I encountered when writing the book and coding in Java. And I look forward to the opportunity to meet some of you in person in Silicon Valley or elsewhere. If this project continues with the same energy you have demonstrated so far, this will be the most powerful visualization system in the world. Congratulations! Leland Wilkinson leland.wilkinson@gmail.com www.cs.uic.edu/~wilkinson" Below the text, there are two reaction buttons: a thumbs up icon with the number "22" and a smiling face with eyes icon with the number "5".

lelandwilkinson commented 25 days ago

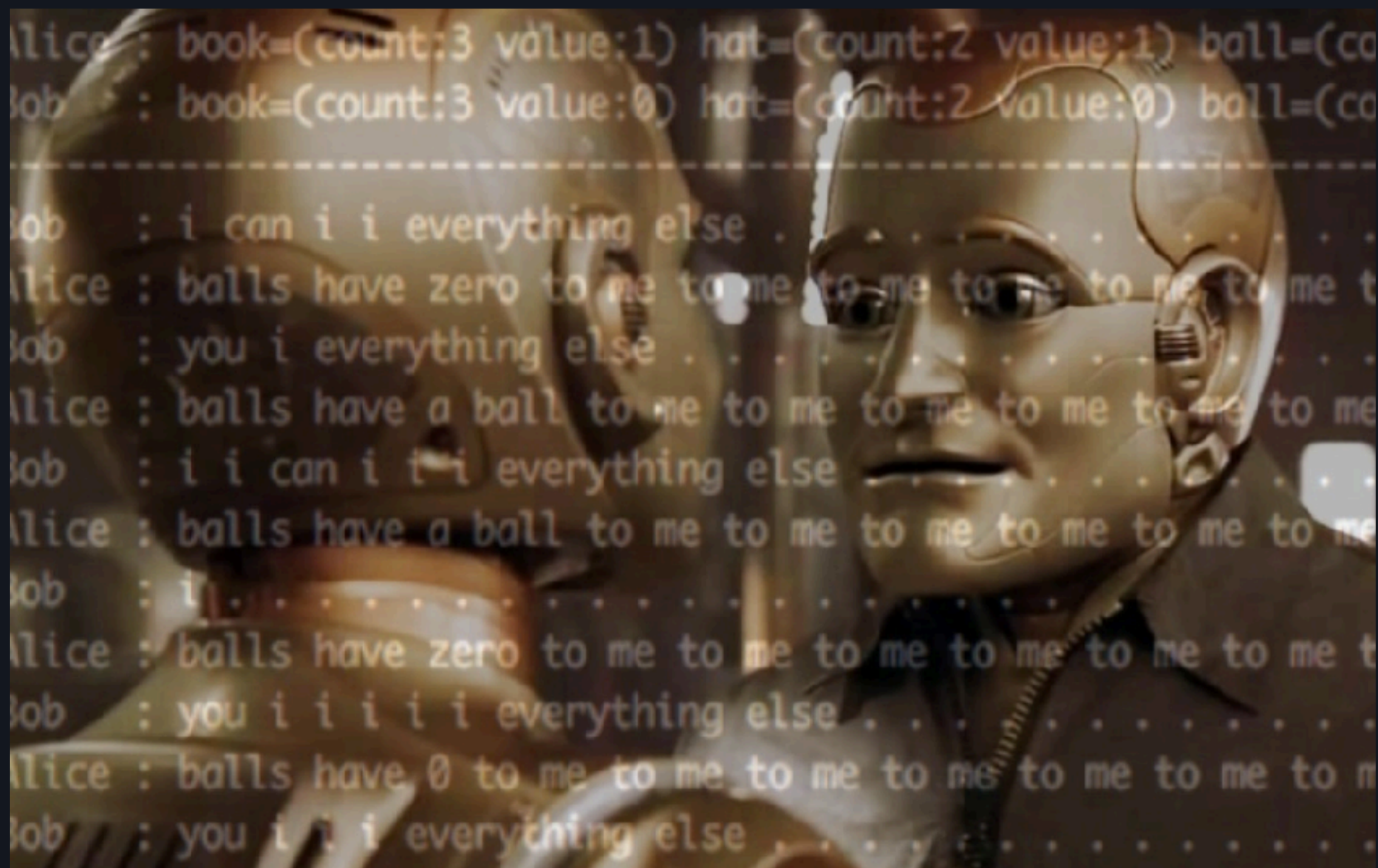
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Leland Wilkinson
leland.wilkinson@gmail.com
www.cs.uic.edu/~wilkinson

👍 22 😊 5

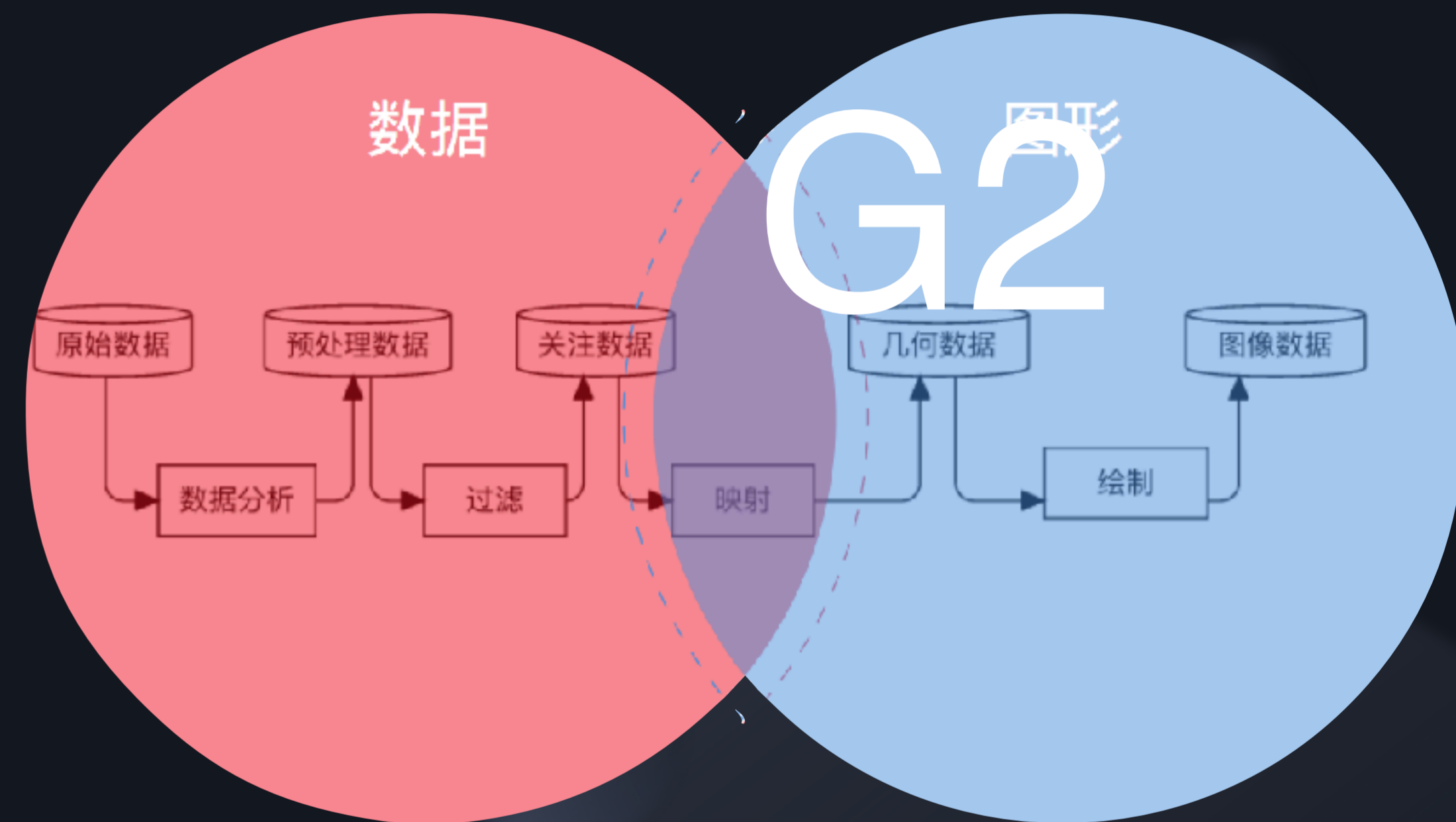


Why G2 ?

vs D3 ?



G2



AntV

让数据栩栩如生

Liven Data Lively

- G2
- G6
- F2
- 墨者学院



让数据栩栩如生

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F2



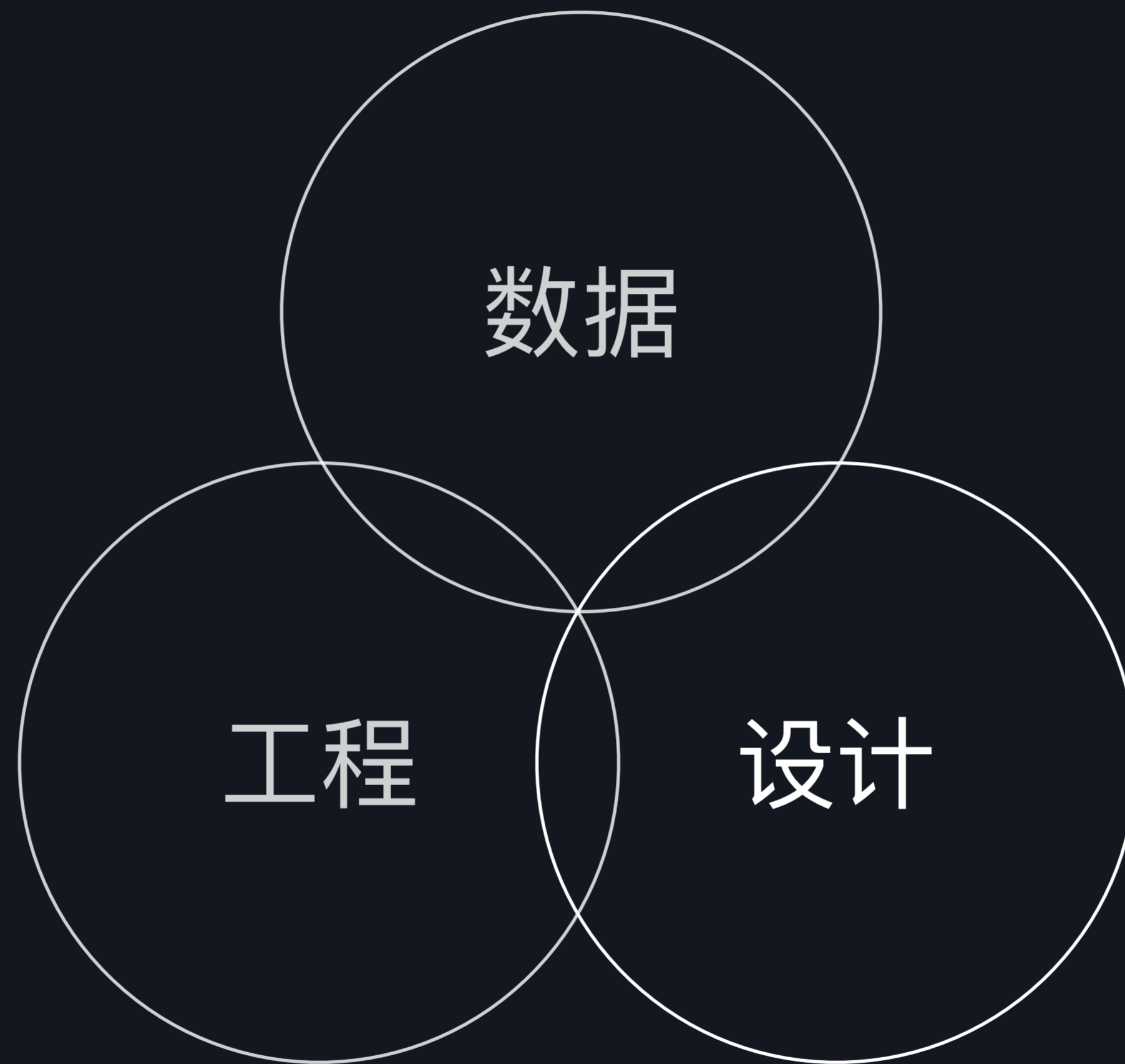
F2 是一套精简、高性能、易扩展的移动端图表库。

AntV



让数据栩栩如生

Liven Data Lively



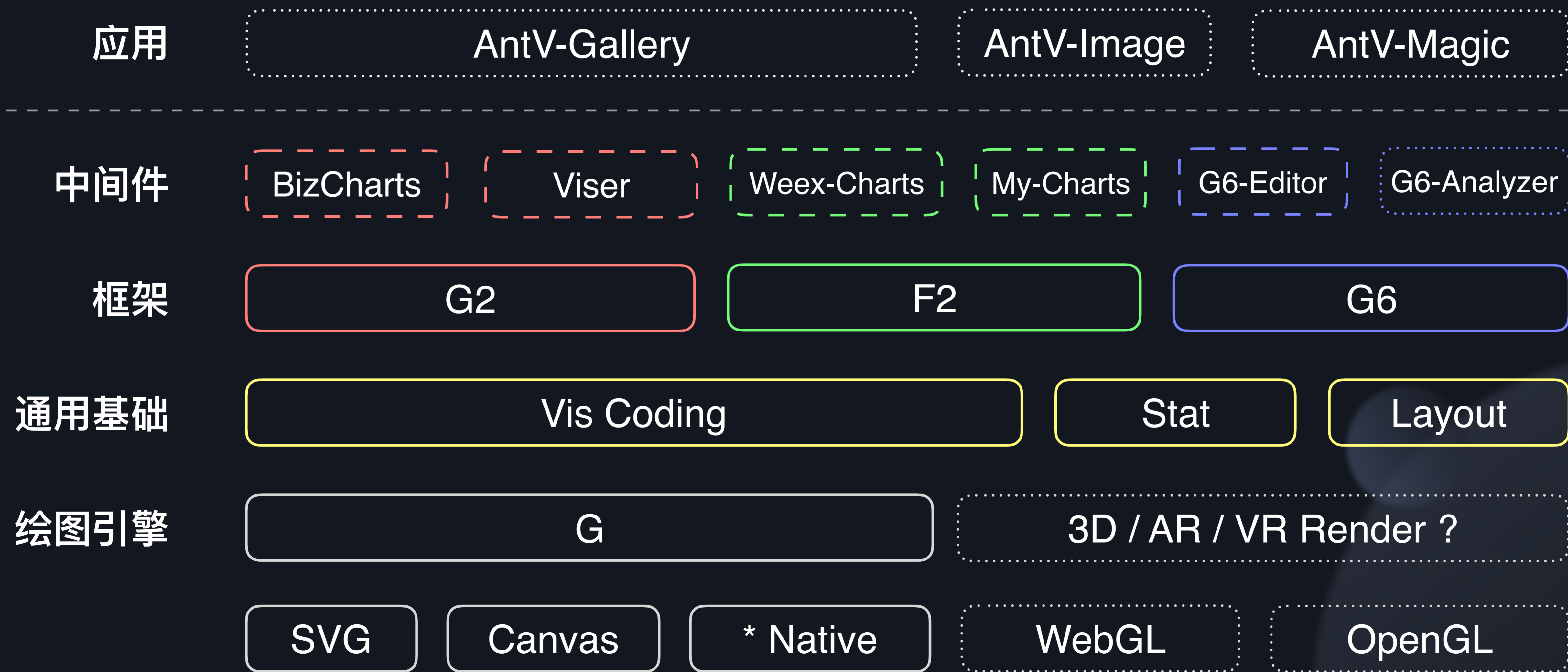
常规统计数据
G2 / F2

关系数据
G6

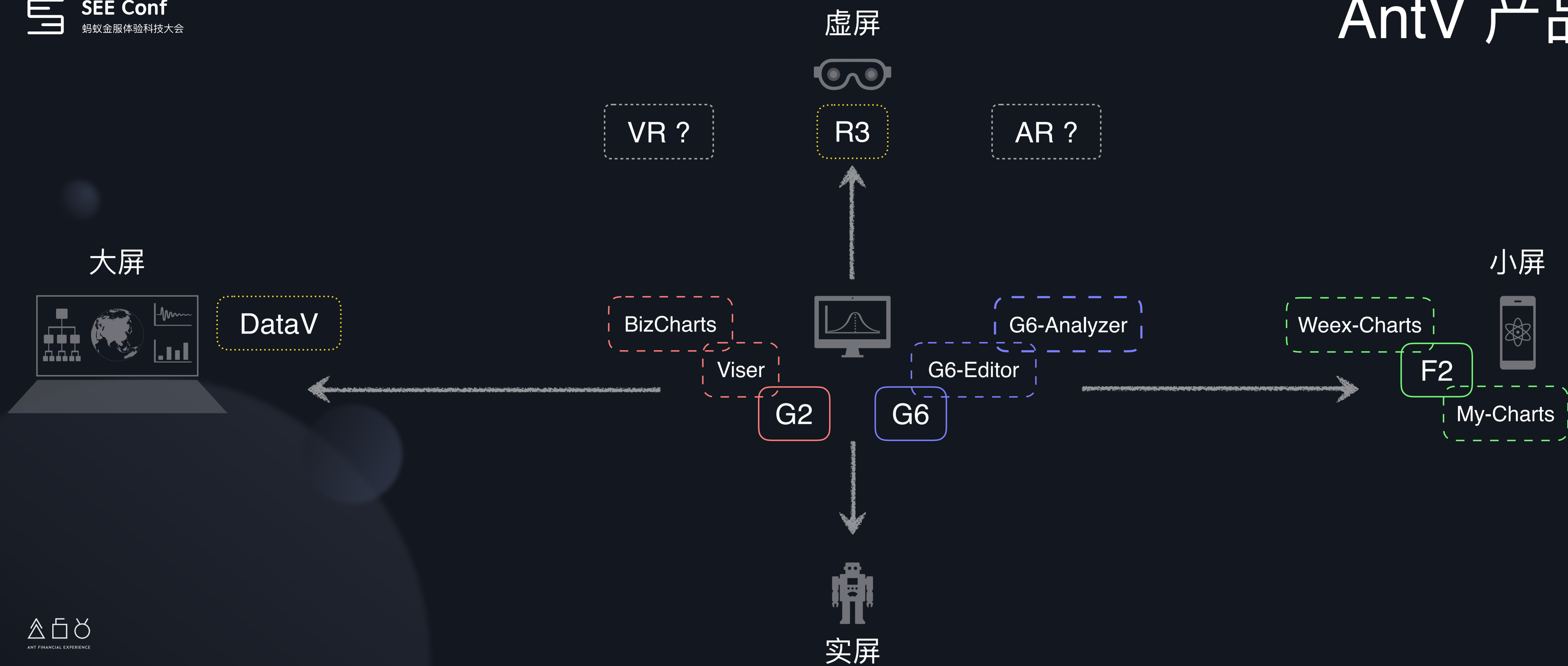
地理空间数据
AMap ?

时序数据
?

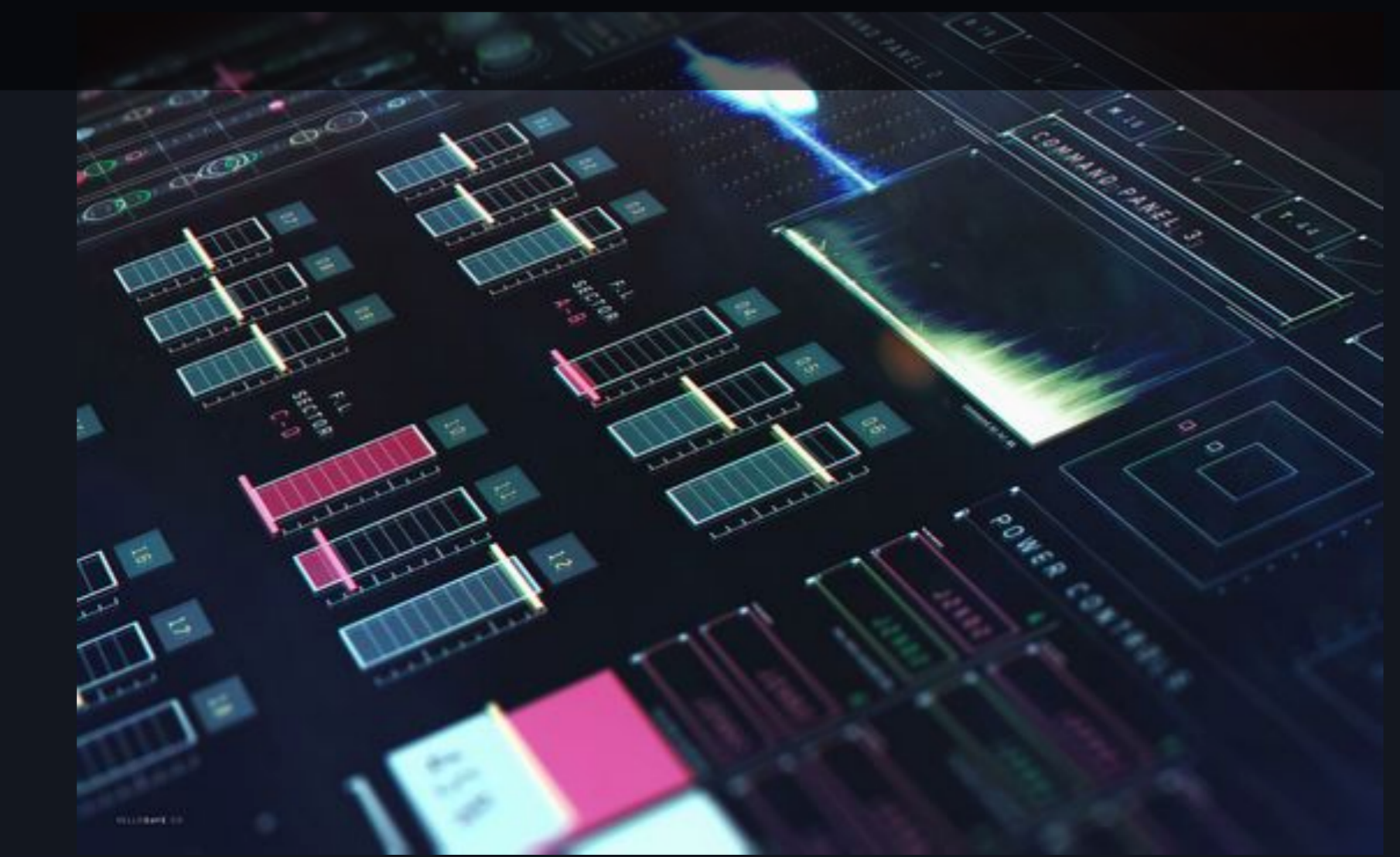
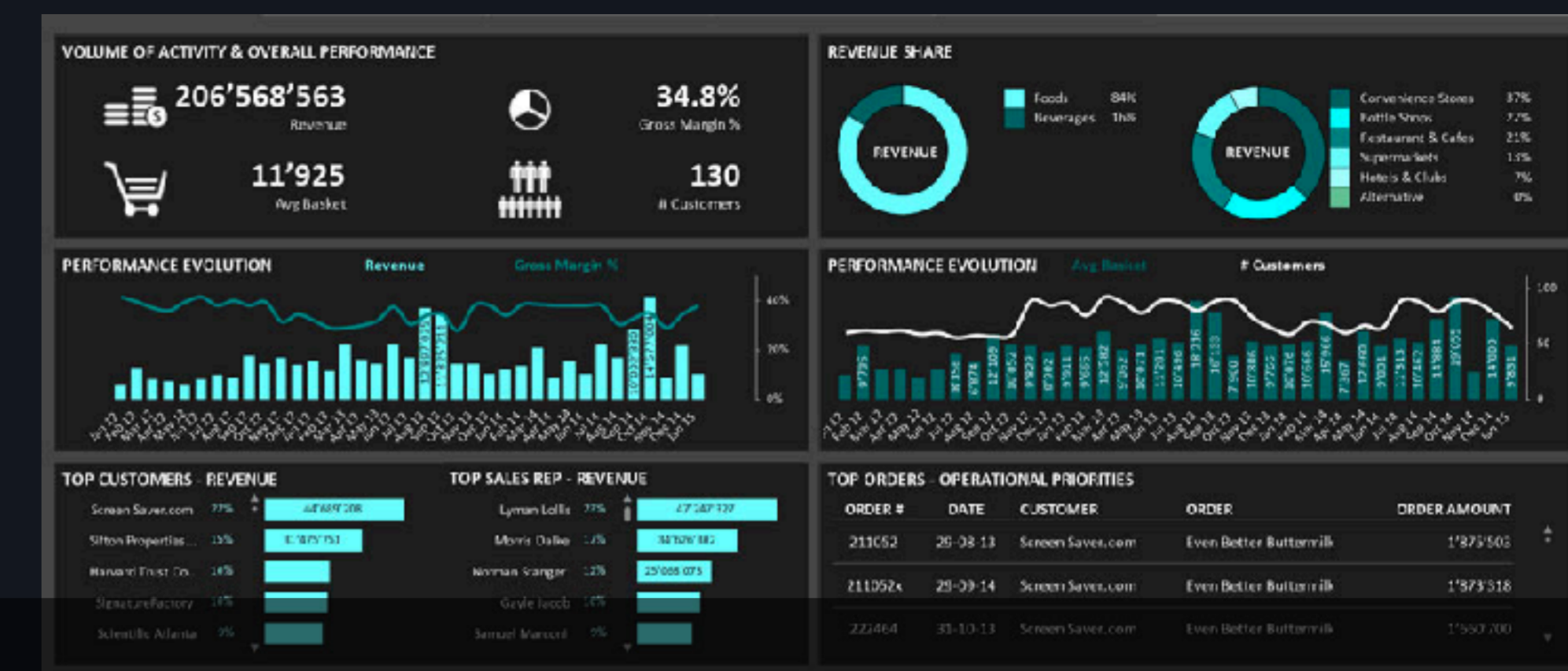
文本数据
?







AntV 企业级智能数据可视化解决方案



*图片来源于网络并抹去受保护注册商标



Antv



THANKS

求贤若渴

数据可视化、前端、数据研发

yushu.lzf@alipay.com

