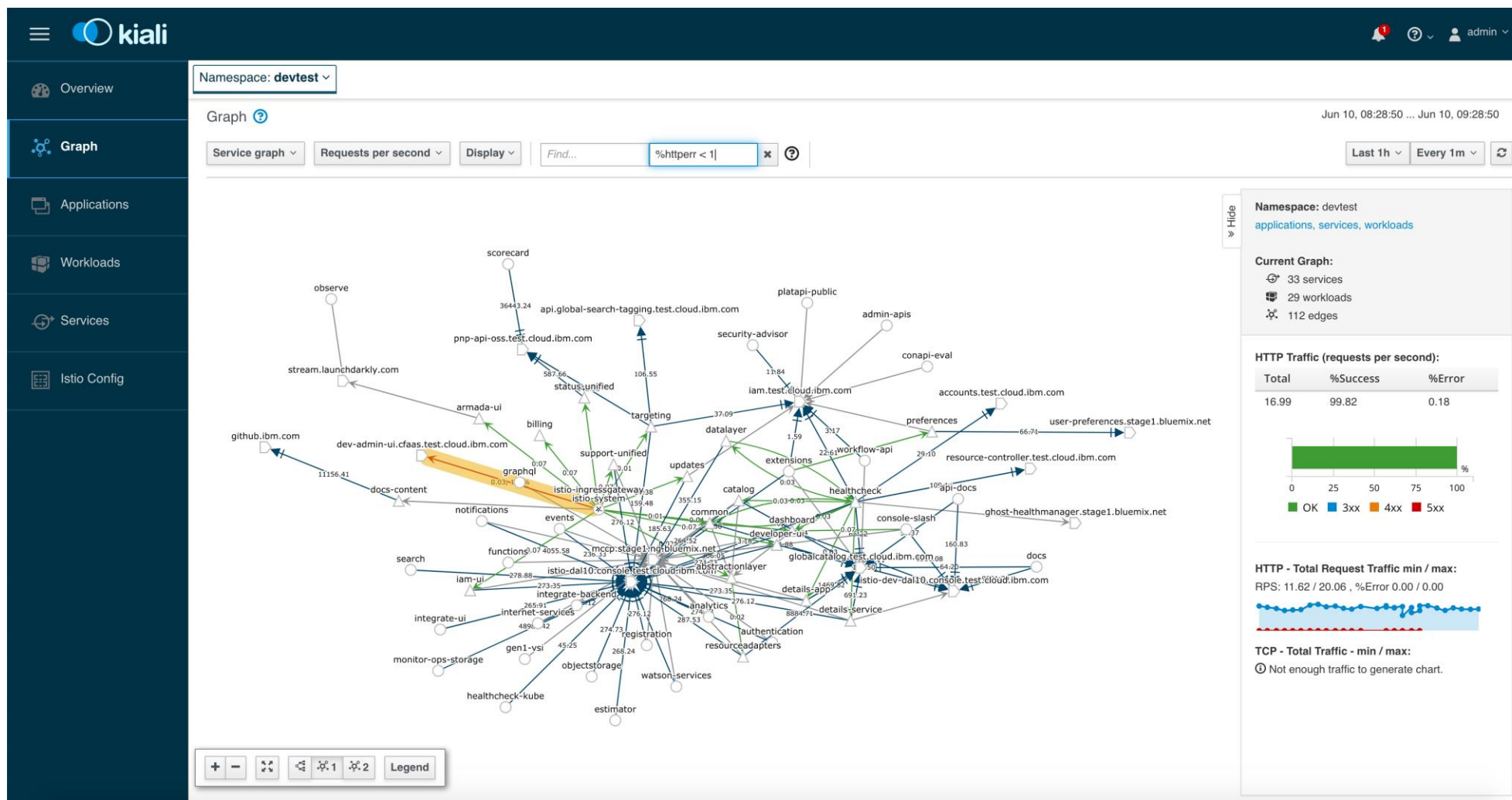


# 以React, Cytoscape實作 Service Mesh拓樸圖

D09525015 王偉吉

目的和素材：

Open Source的kiali僅支援單叢集Service Mesh拓樸圖，但我的系統需支援多叢集，因此使用React和Cytoscape實作Service Mesh拓樸圖。

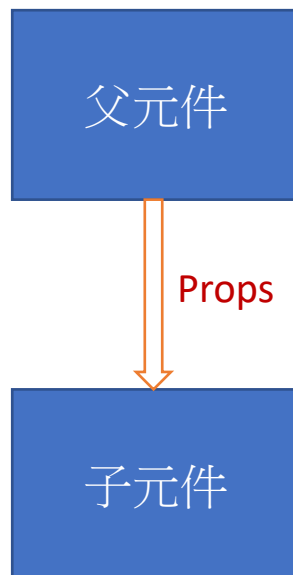


# 大綱

- React
- CytoscapeJS
- Service Mesh
- Service Mesh拓樸圖


# React

- 為讓開發者更有效率開發UI而誕生的 Javascript 函式庫
- 元件：在 **React** 中任何東西都是元件，就像樂高一樣，你可以用小片的積木組成大塊的。如此也減少前端開發者一直開發重複的介面所造成的開發成本浪費。
- **Props**：單向資料流。



# CytoscapeJS

Cytoscape.js 是一個處理資料分析與視覺化的 javascript 類別庫，可以對資料進行分析和可視化，例如：社交網路關係、網路拓樸圖。



Cytoscape.js

Graph theory (network) library for visualisation and analysis

Repo

GitHub

Updates

Twitter

News & tutorials

Blog

Questions

StackOverflow

Ask a question

StackOverflow

Community discussions

GitHub

License

MIT

DOI

10.5281/zenodo.5593328

Cite

Oxford Bioinformatics Article

npm

v3.20.0

Download

v3.20.0

Extensions

61

npm installs

190k/month

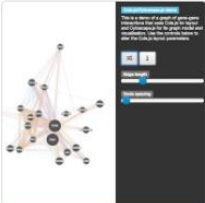
master branch

passing


unstable branch

passing

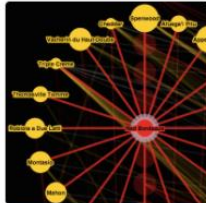
Demos



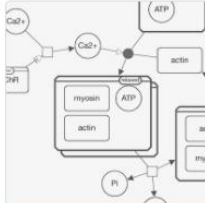
Cola.js gene-gene graph



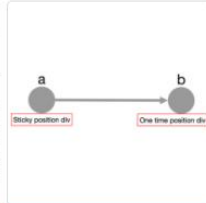
Tokyo railways



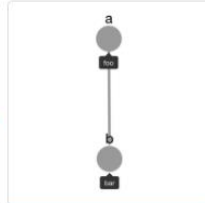
Wine & cheese



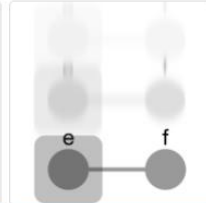
SBGN stylesheet



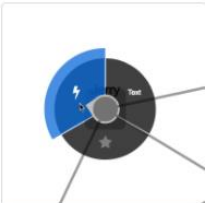
Popper.js extension



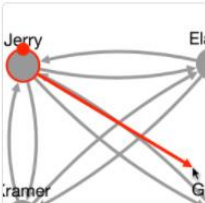
Popper.js extension & Tippy.js tooltips



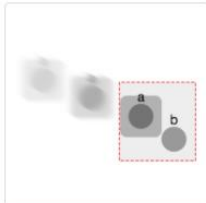
Automove extension




Cxtmenu extension



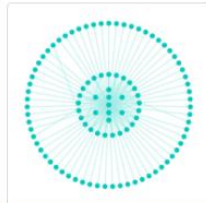
Edgehandles extension



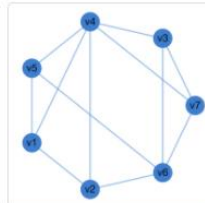
Compound drag-and-drop extension



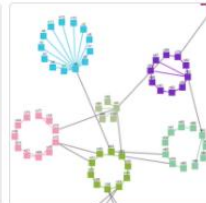
Circle layout




Concentric layout



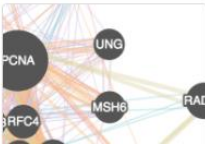
AVSDF layout

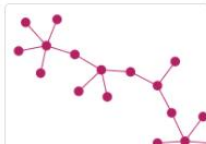



CiSE layout





PCNA, UNG, MSH6, RPA








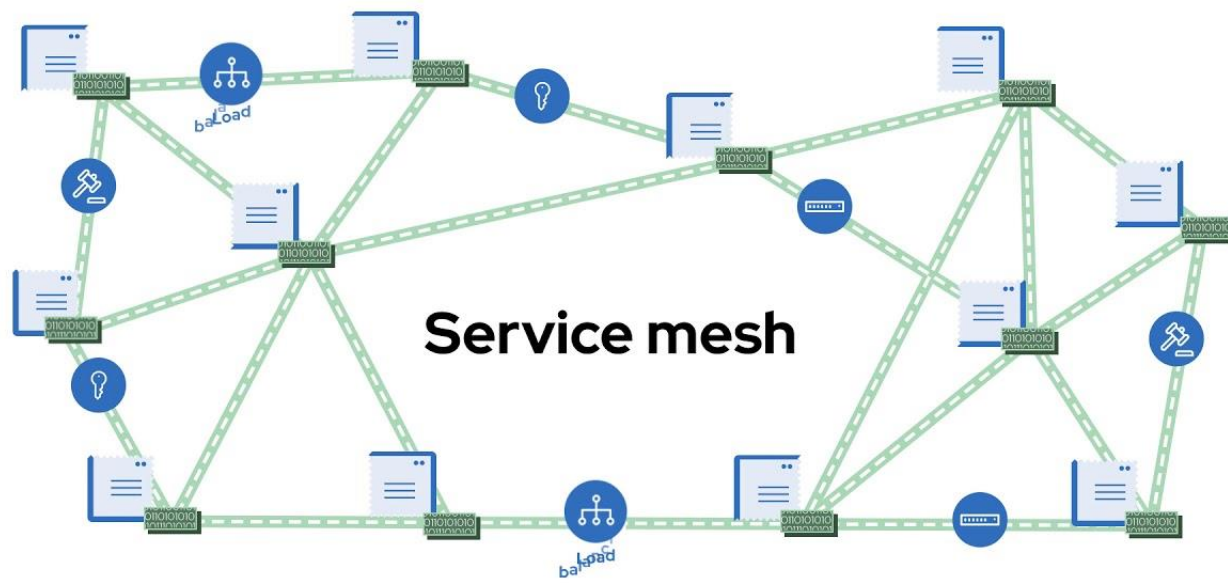






# Service Mesh

是一個Proxy Layer，當有數量龐大的微服務時，Service Mesh可用來控制每個微服務間的通訊。



# Service Mesh拓樸圖

## Mesh管理

+ 建立

編輯

刪除

進入Mesh

總數 5

#	名稱	MESH中的叢集		辨識碼
1	roy-k19-190-172	<div>沒有回應</div>	roy-190-172	60e7c174e72b071fe2ce7ae6
2	roy-k20-190-171	<div>正常</div>	roy-190-171	60e7c92de72b071fe2ce7ae7
3	mesh209	<div>正常</div>	acm10.144.190.209-nats-ha	615158f963eb10004b52a27b
4	mesh176	<div>正常</div>	istio-10.144.190.176	615d07022004a67313336c52
		<div>正常</div>	istio-10.144.190.177	
		<div>正常</div>	acm10.144.190.210-nats-ha	
5	ttwu	<div>正常</div>	test98	61654b4851dc224f369c379d
		<div>正常</div>	test151	

MsgMgtModal.jsx X List.jsx M {} package.json X JS index.js

{} package.json > {} dependencies

50 100ash : 4.17.20 ,

51 "nats": "1.4.9",

52 "node-nats-streaming": "0.2.6",

53 "prop-types": "15.7.2",

54 "properties": "1.2.1",

55 "rc-menu": "8.0.0-alpha.4",

56 "rc-slider": "9.2.4",

57 "react": "16.12.0",

58 "react-ace": "9.3.0",

59 "react-bootstrap": "1.0.1",

60 "react-bootstrap-table-next": "3.3.3",

61 "react-copy-to-clipboard": "5.0.1",

62 "react-cytoscapejs": "1.2.1",

63 "react-dom": "16.12.0",

64 "react-grid-layout": "1.1.1",

65 "react-intl": "2.9.0",

66 "react-json-view": "1.19.1",



```
gMgtModal.jsx  List.jsx M  Panel.jsx X  JS index.js
modules > network-topology > components > Panel.jsx > ...
}
{panelToolbar}
{
  // Service圖層
  // !loading && !reloadBool&&type, 非reload打display, 並解決loading=true點位
  // 疊一起秒差問題
  // reloadBool && type, reload打display
  (!loading && !reloadBool && type === 'service') ?
  <TopologyCytoscapeService {...props} /> : (reloadBool && type ===
  'service') ?
  <TopologyCytoscapeService {...props} /> : null
}
```

## Event

```
on={'tap', 'node'}
cy=({cy}) => {
  cy.nodes().removeListener('click');
  cy.nodes().once('click', (e) => {
    const node = e.target[0]._private.data;
    this.props.node(node);
    this.props.editInterval(0);
  });
  cy.edges().removeListener('click');
  cy.edges().once('click', (e) => {
    const edge = e.target._private.data;
    this.props.onItemClick(edge);
    this.props.editInterval(0);
  });
});
```

## Data

```
});
if (this.props.reloadBool) {
  if (this.props.updateData.length > 0) {
    this.props.updateData.forEach((e) => {
      const id = '#' + e.data.id;
      cy.batch(function() {
        cy.$(id).data({
          rps: e.data.rps,
          rp: e.data.rp,
          color: e.data.color,
        });
      });
    });
  }
}
```

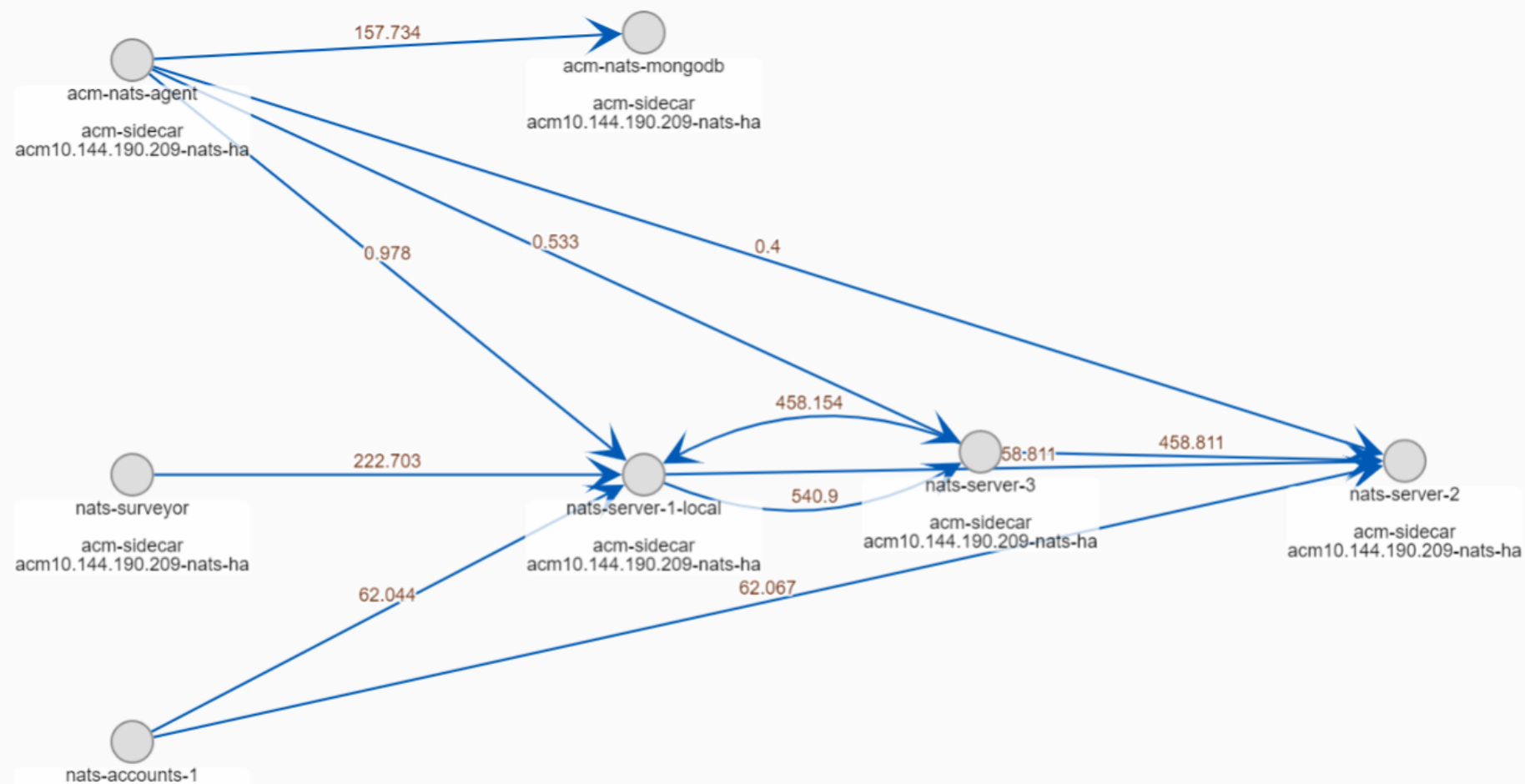
## Node CSS

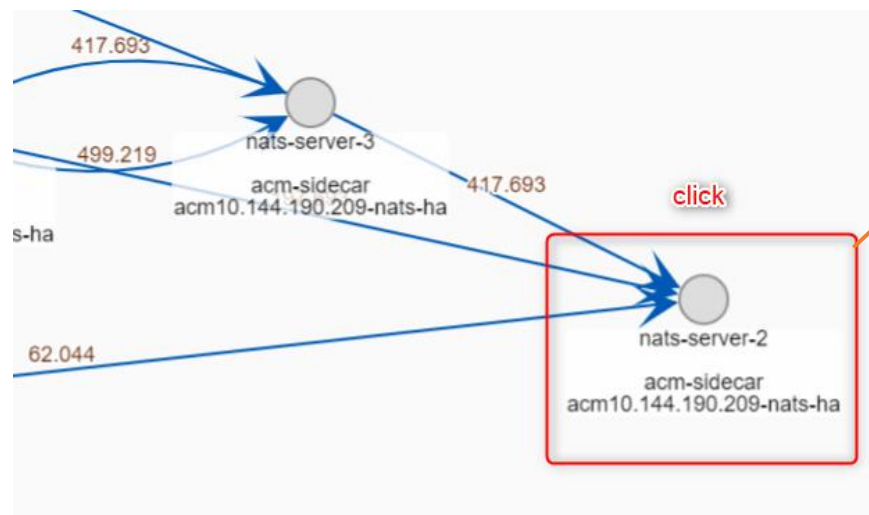
```
dal.jsx  List.jsx  M  TopologyCytoscape_Service.jsx  X  JS ind
> network-topology > components > TopologyCytoscape_Service.jsx > ...

    (this.props.show) ?
      <CytoscapeComponent
        elements={CytoscapeComponent.
          normalizeElements((this.props.topology))}
        wheelSensitivity={0.1}
        style={{
          width: '100%',
          height: '100%',
          position: 'absolute',
        }}
        stylesheet={[
          {
            selector: 'node',
            style: {
              width: 10,
              height: 10,
              color: '#000000',
              backgroundColor: '#DDDDDD',
              borderColor: '#888888',
              borderWidth: '0.5px',
              shape: 'ellipse',
```

## Edge CSS

```
    },
  ],
  {
    selector: 'edge',
    style: {
      width: 0.6,
      lineColor: 'data(color)',
      targetArrowColor: 'data(color)',
      targetArrowShape: 'vee',
      curveStyle: 'bezier',
      label: edgeLabelShow,
      fontSize: '4.5px',
      color: '#642100',
      textOpacity: 0.98,
      textOutlineColor: 'white',
      textOutlineWidth: 0.5,
      textMarginY: -3,
    },
  },
],
```





## ^ 環境資訊

微服務網格	mesh209
服務端口	6
工作負載	1
應用服務	--

## ^ 元件資訊

名稱	nats-server-2
類型	service
專案	acm-sidecar
埠號	4222, 6222, 8222, 7777, 7422, 7222, 1883, 443
叢集	acm10.144.190.209-nats-ha
建立時間	2021/10/12 下午3:01

## 參考資料

- React: [https://developer.mozilla.org/zh-TW/docs/Learn/Tools\\_and\\_testing/Client-side\\_JavaScript\\_frameworks/React\\_getting\\_started](https://developer.mozilla.org/zh-TW/docs/Learn/Tools_and_testing/Client-side_JavaScript_frameworks/React_getting_started)
- Istio: <https://istio.io/>
- CytoscapeJS : <https://js.cytoscape.org/>

Thanks~