

从 Jenkins 到 GitHub Actions

CI/CD 现代史

演讲者 苗兆丰

个人介绍

.yaml

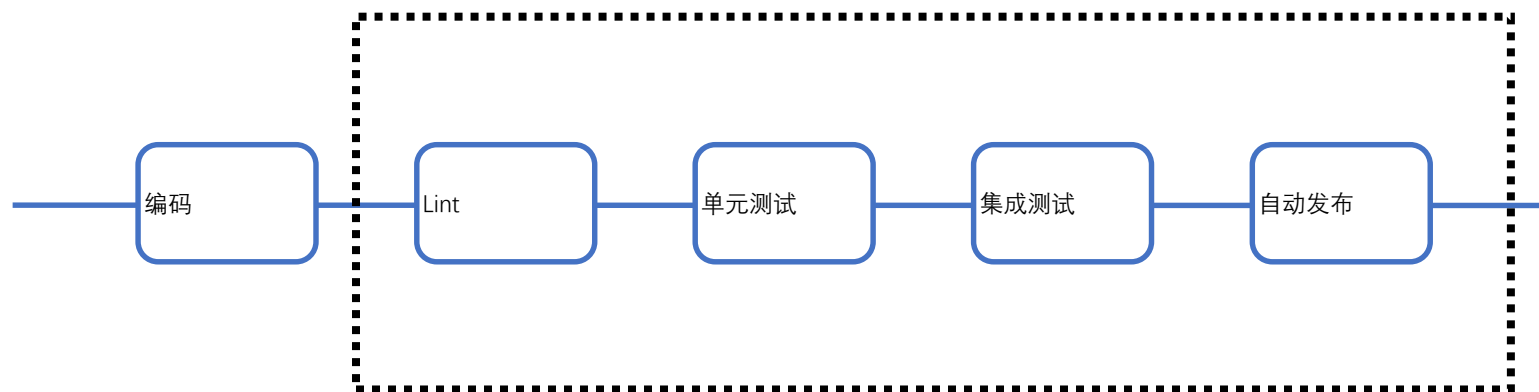
```
name: "苗兆丰"  
nickName: "maple"  
graduatedFrom: "西安交通大学"  
graduatedAt: "2016/7"  
workingIn: "腾讯 QQ-Web 团队"  
workingOn: "研发效率提升工作"
```

CI/CD 现代史

之

CI/CD 是什么？

CI/CD 是什么?



能够频繁、高质量地完成交付

对生活充满希望

CI/CD 现代史

之

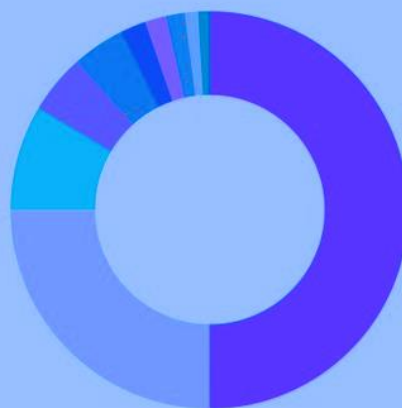
CI/CD 是什么？

行业生态

公有云服务化几乎被 Travis CI/Circle CI 瓜分

Top 10 CI systems used with GitHub.com

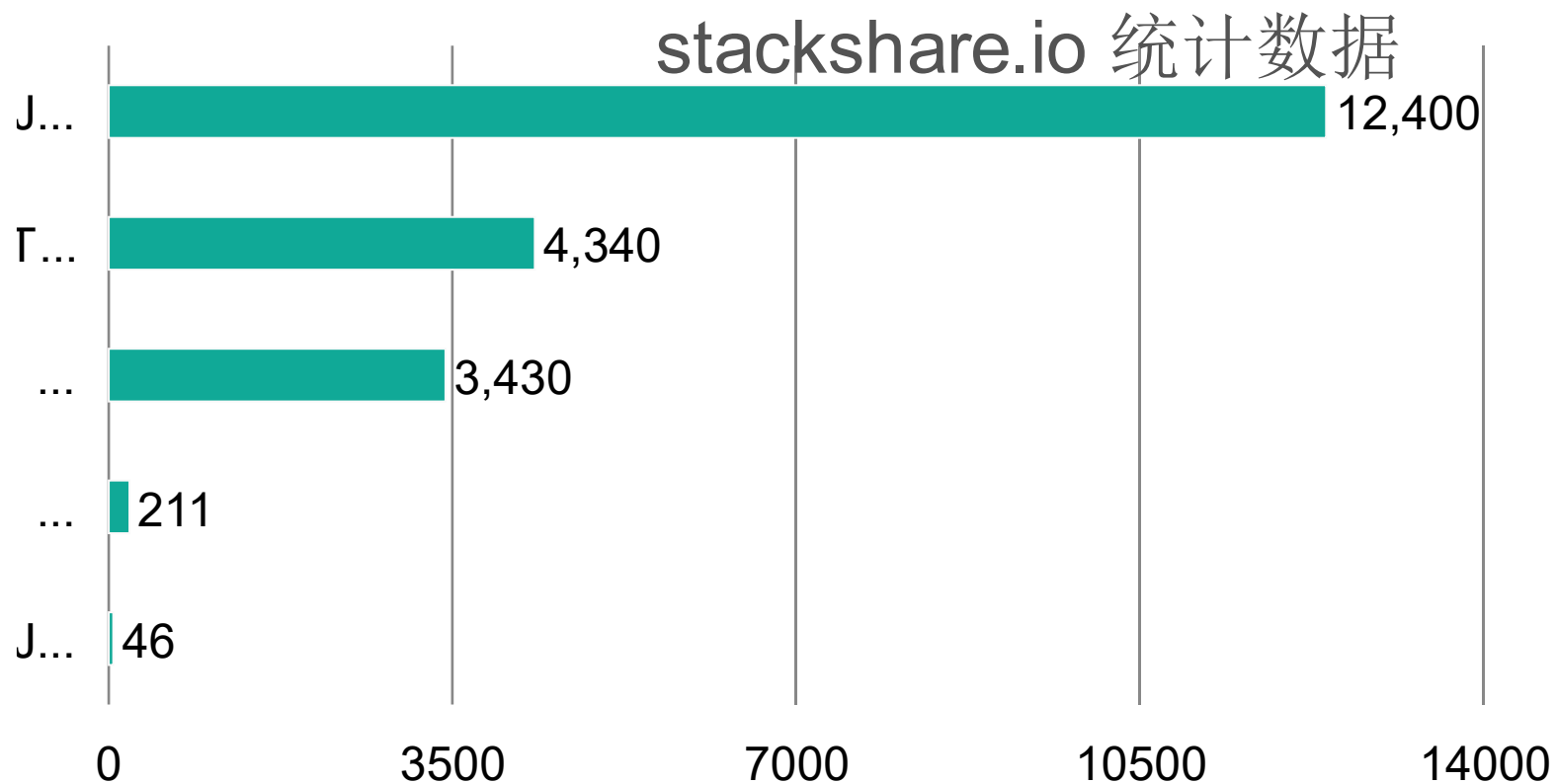
(based on most used commit status contexts)



● Travis CI ● Circle CI ● Jenkins ● AppVeyor ● CodeShip ● Drone
● Semaphore CI ● Buildkite ● Wercker ● TeamCity

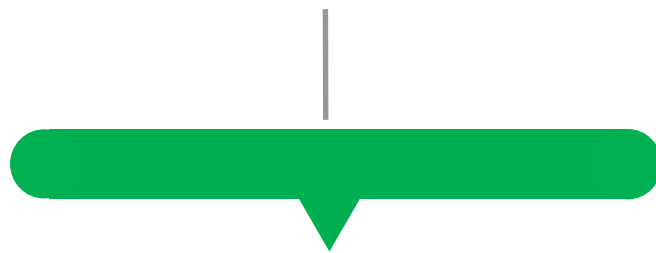
行业生态

Jenkins 在私有化部署市场一家独大



行业生态

是不是数年间 CI 行业毫无进步？



Jenkins / Travis CI

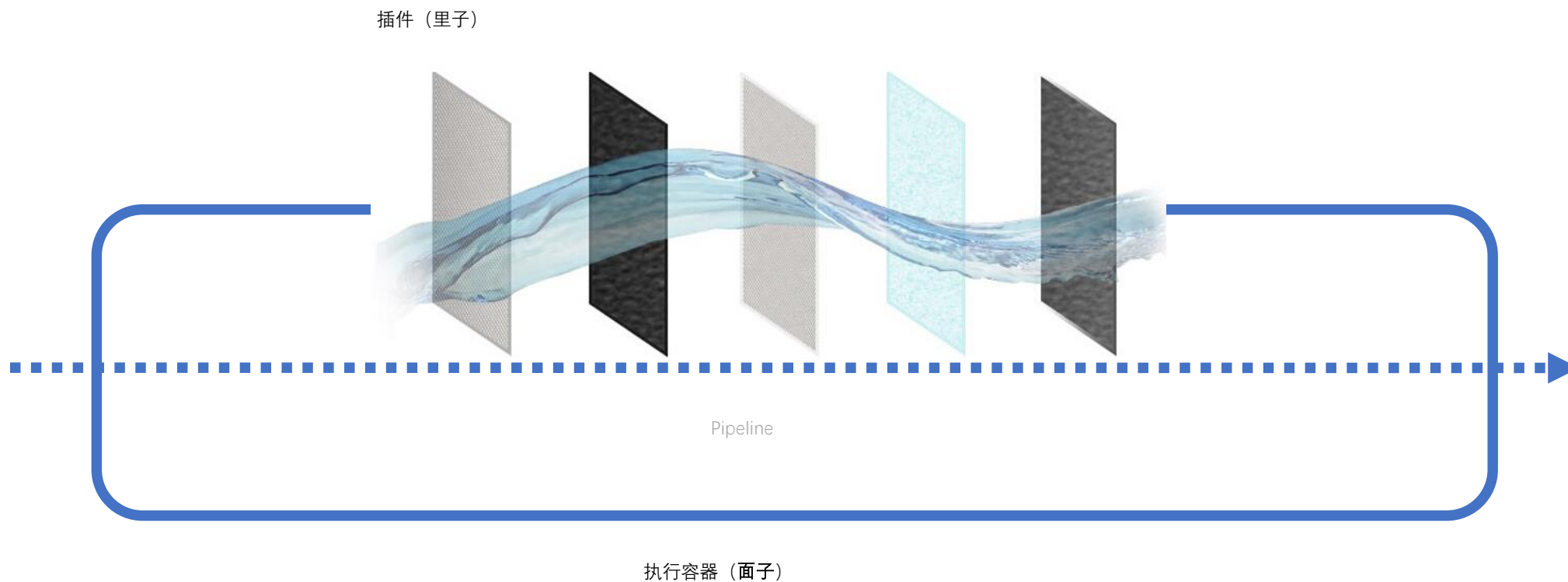
2011

行业生态



行业生态

CI 的“面子”和“里子”



行业生态

要么更新“面子”，要么更新“里子”，要么一起更新！



行业生态

以 VM 为主的“面子”和以 jar 包、Shell 为主的“里子”有哪些缺点？

VM / 实体机

资源占用多
启动时间长
管理成本高
...

jar 包 / Shell

对插件贡献者要求高
对运行环境有特定要求

行业生态

CI 的命运同样要考虑到历史的进程

2013

行业生态

CI 的命运同样要考虑到历史的进程

2013



行业生态

CI 的命运同样要考虑到历史的进程

2013



行业生态

Docker vs. VM

启动快

启动慢

资源占用少

资源占用大

体积小

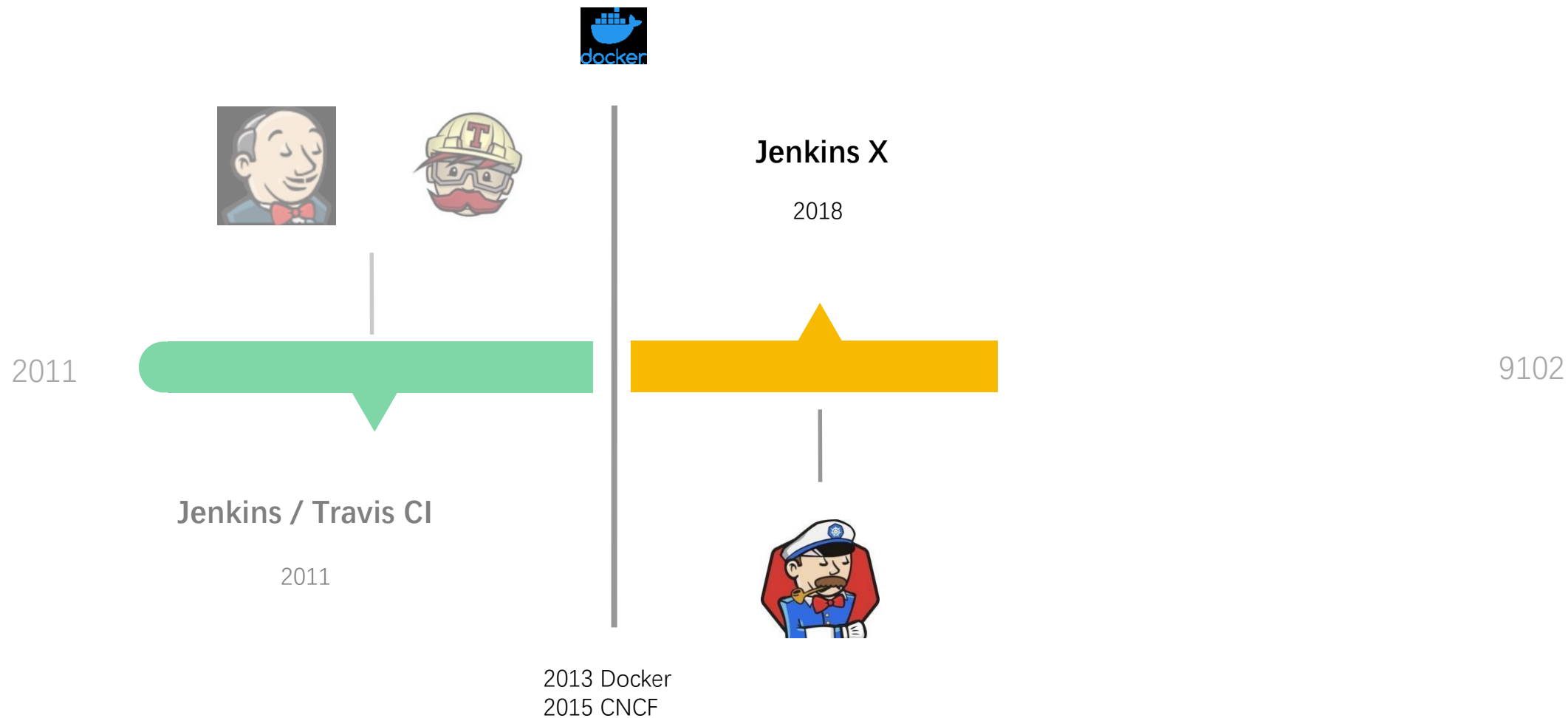
体积大

管理成本低

管理成本高

行业生态

有了原子弹，下一步怎么搞？



行业生态

Jenkins X



Jenkins

2011

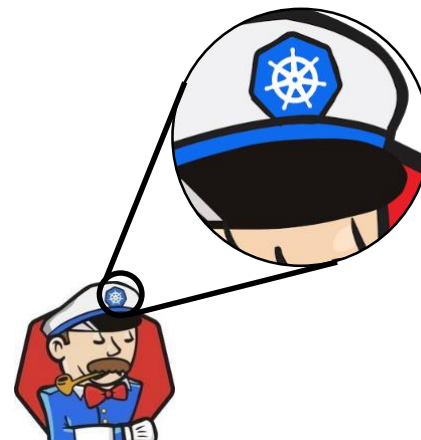
行业生态

Jenkins X



Jenkins

2011



Jenkins X

2018

行业生态

Jenkins X



“Jenkins X is a CI/CD [continuous delivery] solution for modern cloud applications on [Kubernetes ...](#)”

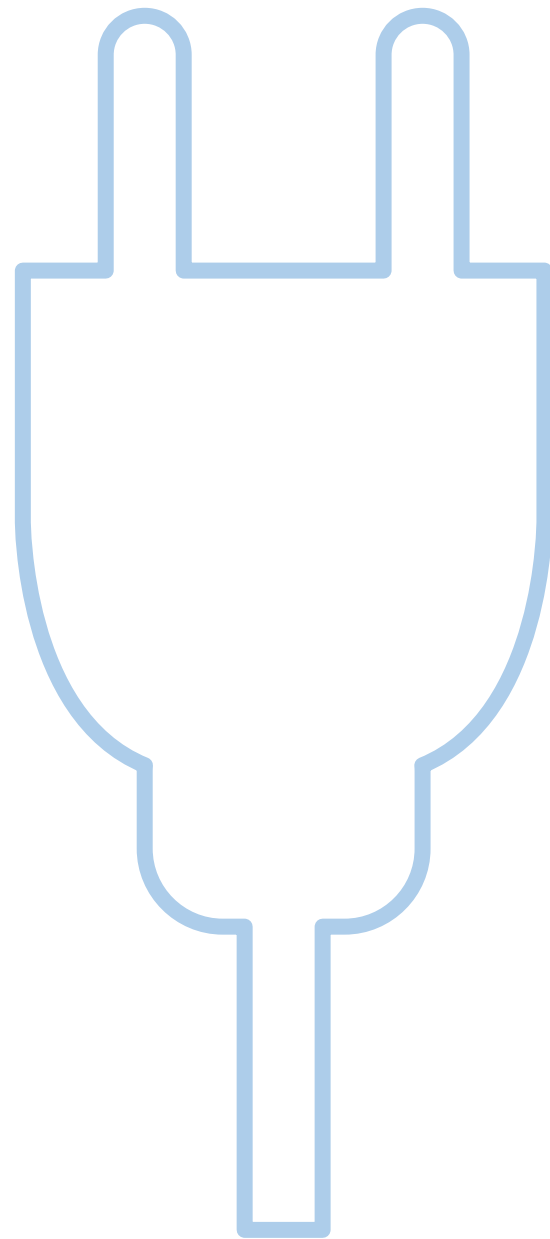
行业生态

插件的形态

npm 包?

jar 包? 好像都没有本质差别?

Pip 包? 一段 Shell?



行业生态

Docker as Plugin



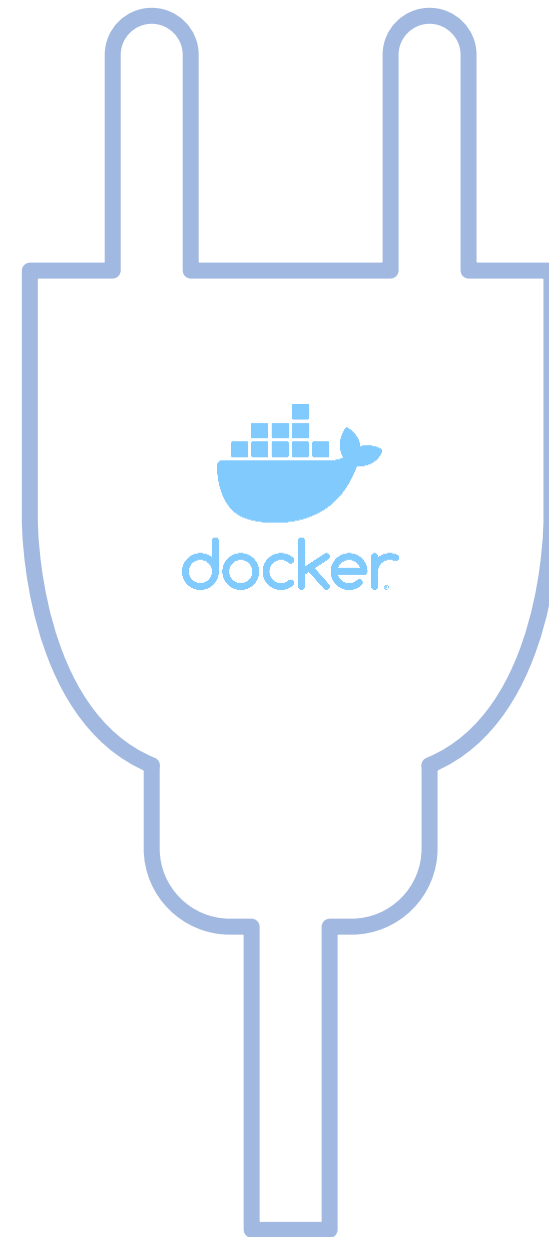
```
FROM python:3-slim
```

```
WORKDIR /scfcli/
```

```
COPY ..
```

```
RUN pip install --no-cache-dir scf && \  
    scf --version && \  
    echo "finish"
```

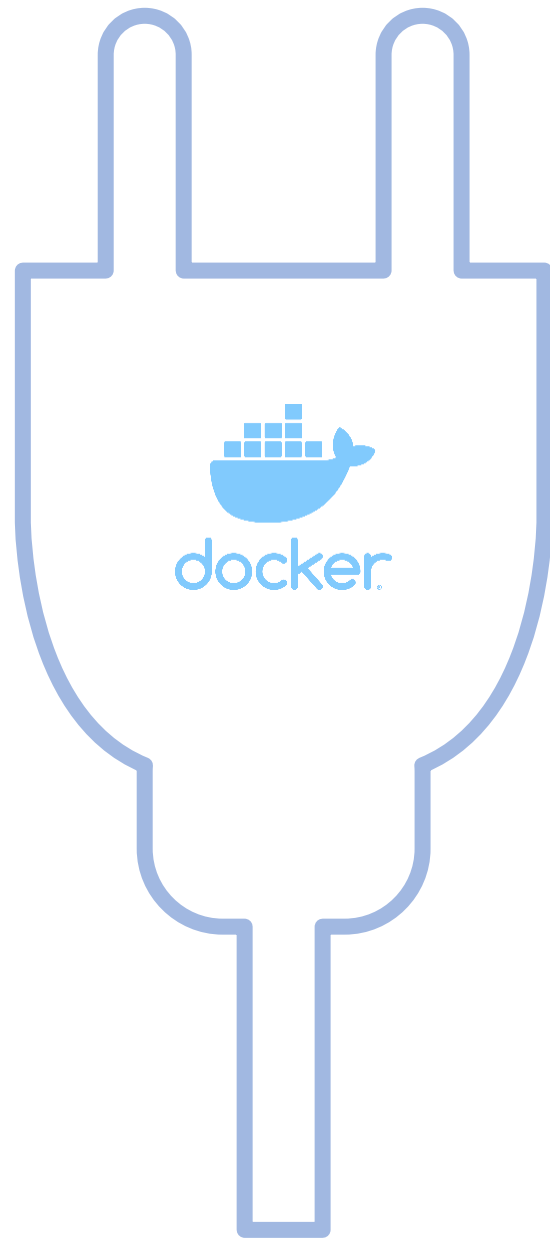
```
ENTRYPOINT [ "/scfcli/entrypoint" ]
```



行业生态

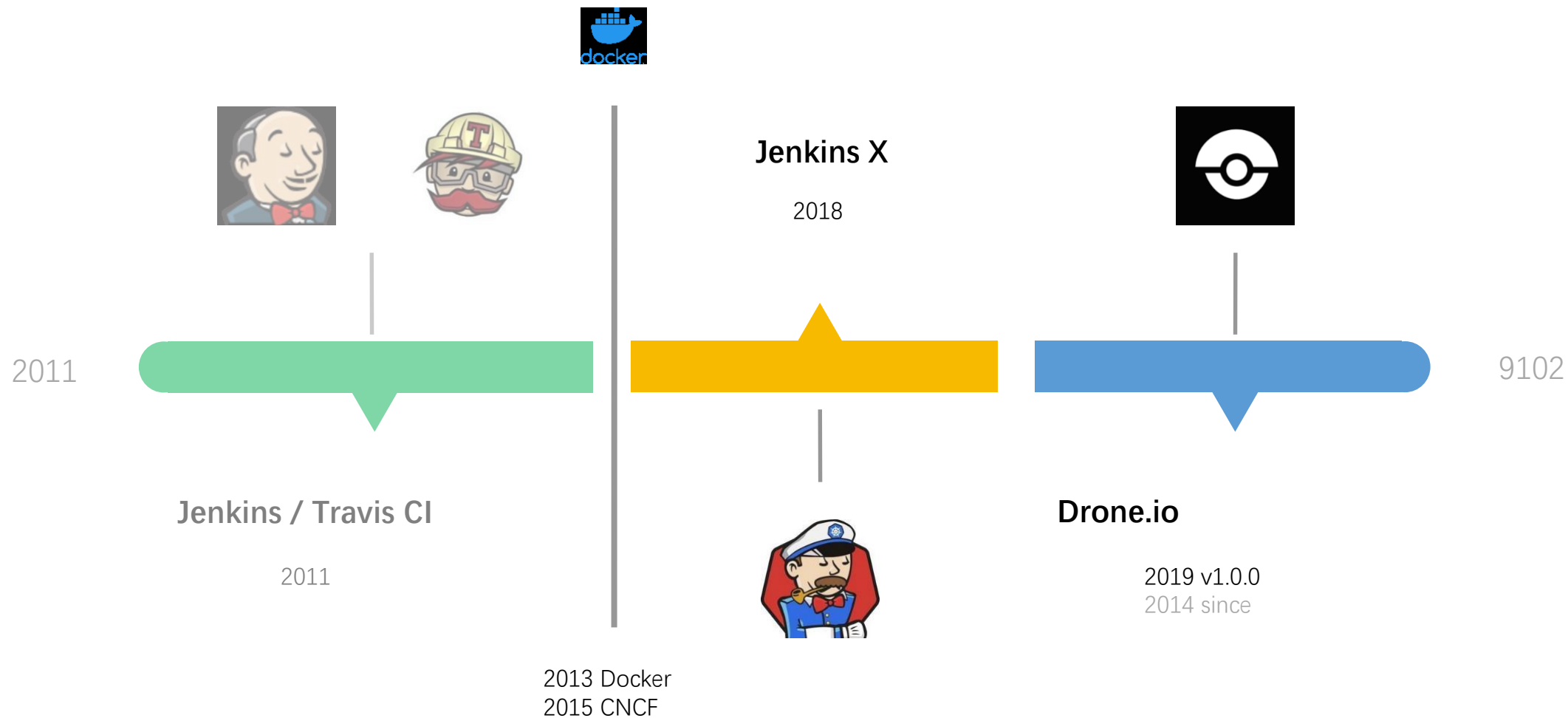
革命性的开创

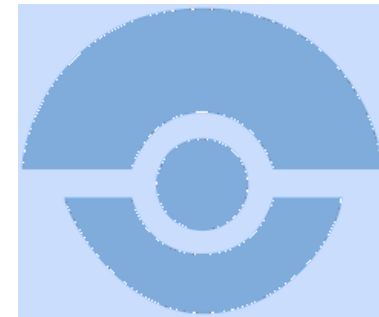
- 插件有了跨 CI 使用的可能性
- 插件自带执行环境
- 插件生态融入 Docker 生态



行业生态

全新的插件生态





```
1  kind: pipeline
2
3  steps:
4    - name: build
5      image: node
6      commands:
7        - npm install
8        - npm test
9        - npm run dist
10
11   - name: publish
12     image: plugins/npm
13     when:
14       event: [ tag ]
15
```

Docker

Kubernetes

AWS S3

AWS ECR

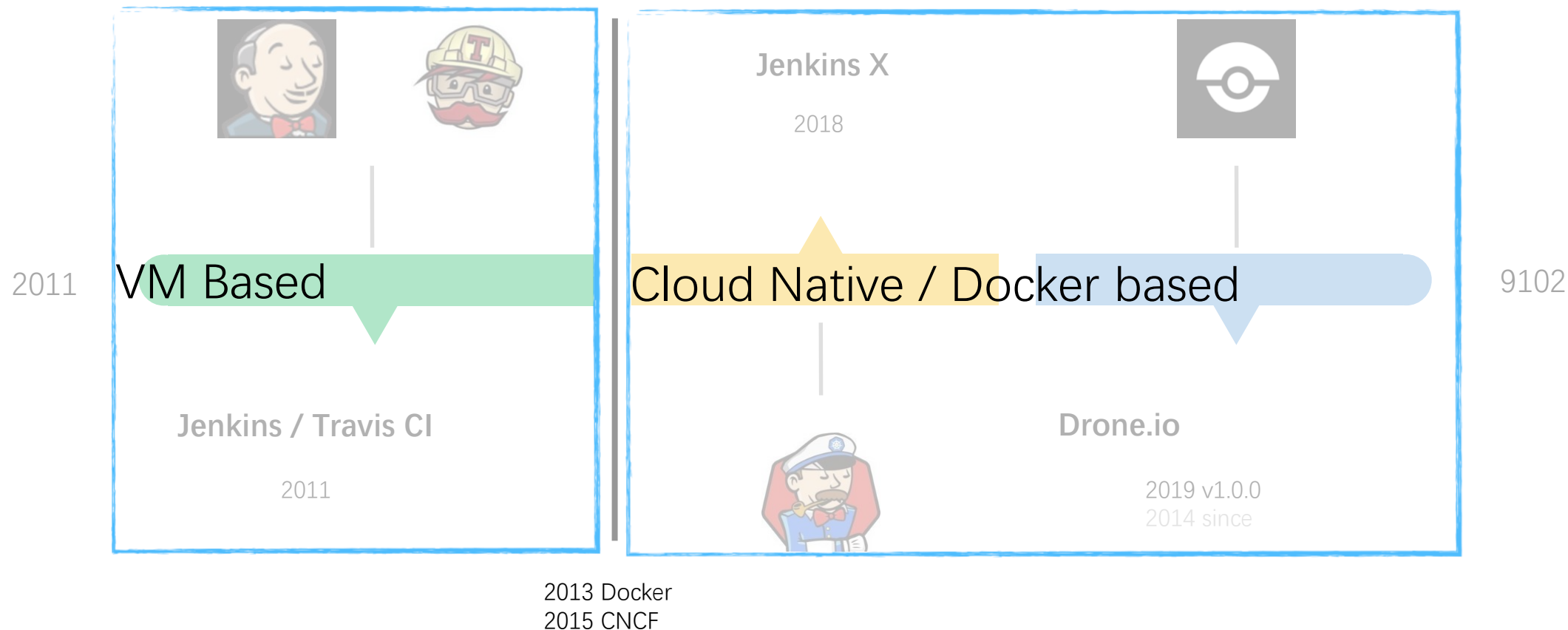
NPM Publish

GitHub Release

GitHub Pages

行业生态

新旧更迭



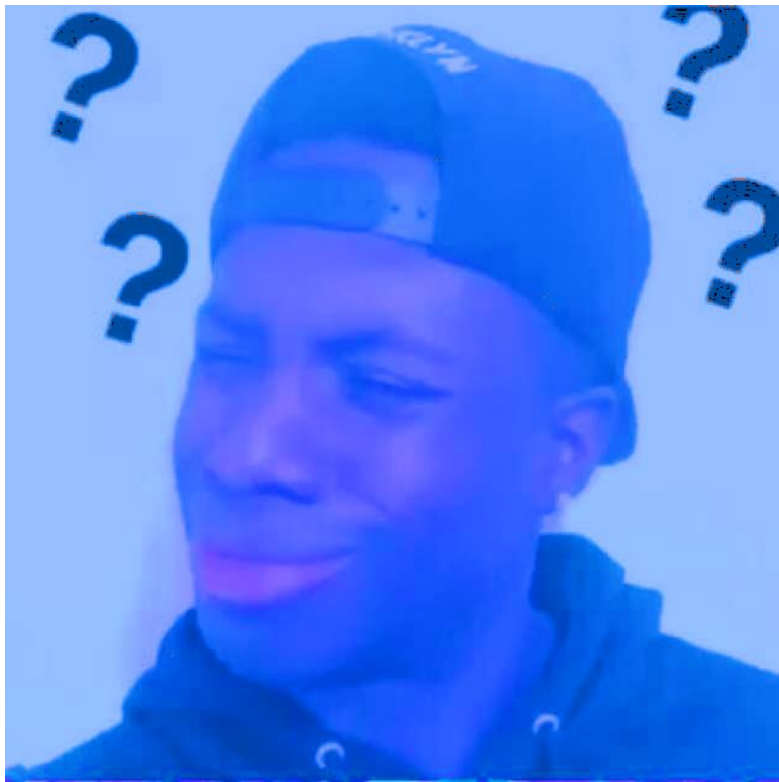
行业生态

一切都看起来那么完美，然而…

致命缺陷

行业生态

致命缺陷



CI/CD 现代史

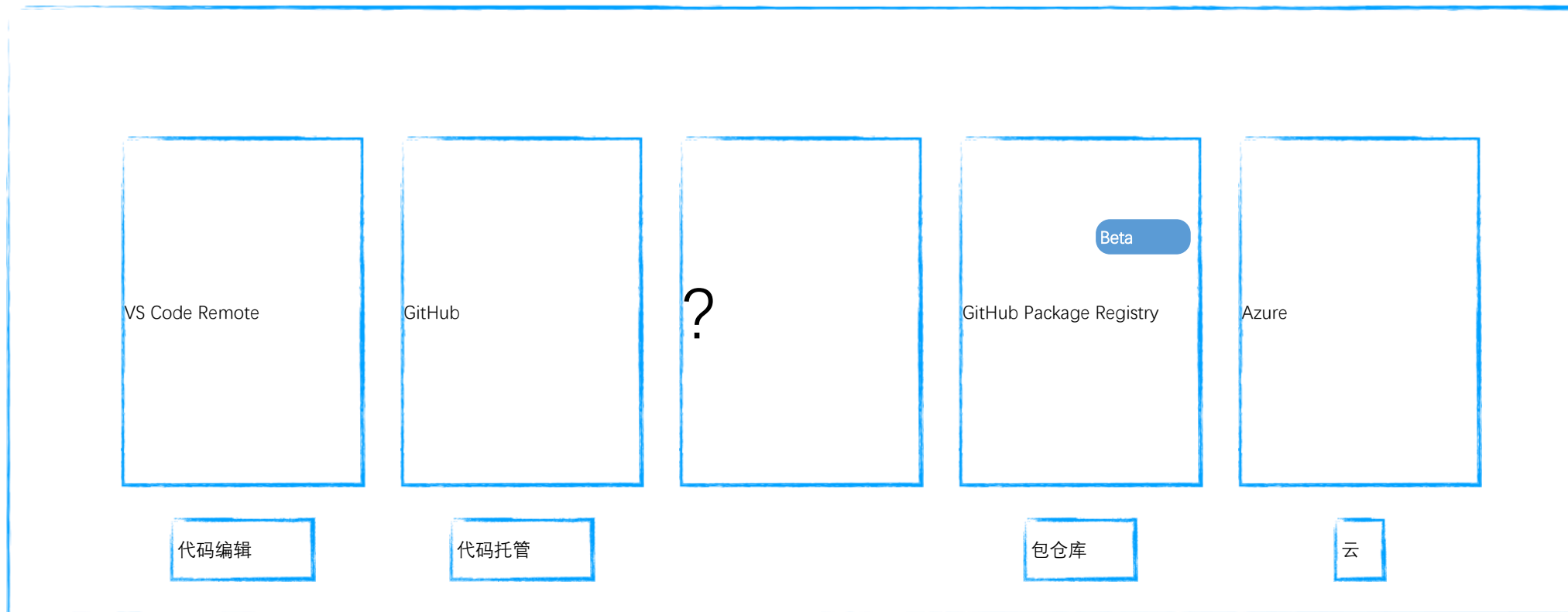
之

“搅局者” GitHub Actions

全局者

GitHub Actions

微软的野心



观者 GitHub Actions

怎么做? GitHub Actions 的艰难抉择



GitHub Universe 2018

观局者

GitHub Actions

最开始，其实我也想全面上 Docker



GitHub Universe 2018

“An Action is a **Docker container** that runs as part of a Workflow.”

全局看 GitHub Actions

后来，我…我都要

Types of actions

You can build Docker container and JavaScript actions. Actions require a metadata file to define the inputs, outputs and main entrypoint for your action. The metadata filename must be `action.yml`.

Type	Virtual environment
Docker container	Linux
JavaScript	Linux, MacOS, Windows

GitHub Actions 2019 Beta Documents

全局看 GitHub Actions

实现原理

```
jobs:
  test:
    name: GitHub Action Official Demo
    runs-on: ${{ matrix.os }}

    strategy:
      matrix:
        node_version: ['8', '10', '12']
        os: [ubuntu-latest, windows-latest, macOS-latest]

    steps:
      - uses: actions/checkout@v1
      - name: Use Node.js ${{ matrix.node_version }}
        uses: actions/setup-node@v1
        with:
          node-version: ${{ matrix.node_version }}
      - name: npm install, build and test
        run: |
          npm install
          npm run build --if-present
```

全局看 GitHub Actions

实现原理

```
jobs:  
  test:  
    name: GitHub Action Official Demo
```

```
  runs-on: ${{ matrix.os }}
```

```
  strategy:
```

```
    matrix:
```

```
      node_version: ['8', '10', '12']
```

```
      os: [ubuntu-latest, windows-latest, macOS-latest]
```

```
  steps:
```

```
- uses: actions/checkout@v1
```

```
- name: Use Node.js ${{ matrix.node_version }}
```

```
  uses: actions/setup-node@v1
```

```
  with:
```

```
    node-version: ${{ matrix.node_version }}
```

```
- name: npm install, build and test
```

```
  run: |
```

```
    npm install
```

```
    npm run build --if-present
```

github.com/action/setup-node/releases/tag/v1



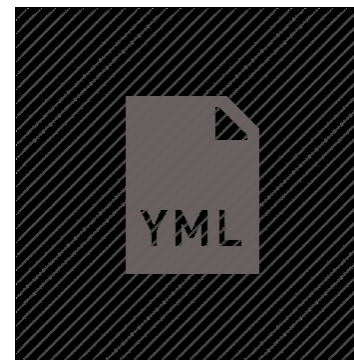
```
- name: Use Docker Hub
```

```
  uses: docker://alpine:3.8
```

全局看 GitHub Actions

📁 .github	Initial Import
📁 __tests__	Add setting for always-auth (#48)
📁 docs	Initial Import
📁 externals	Initial Import
📁 lib	Add setting for always-auth (#48)
📁 node_modules	Consume toolkit from npmjs (#36)
📁 src	Add setting for always-auth (#48)
📄 .gitignore	Update .gitignore (#40)
📄 .prettierrc.json	Initial Import
📄 LICENSE	Initial Import
📄 README.md	Update README.md
📄 action.yml	Deprecate version property (#54)
📄 jest.config.js	Initial Import
📄 package-lock.json	Bump lodash from 4.17.11 to 4.17.15 (#45)
📄 package.json	Consume toolkit from npmjs (#36)
📄 tsconfig.json	Add auth support (#21)

name: 'Setup Node.js environment'



description: 'Setup a Node.js environment'

author: 'GitHub'

inputs:

node-version:

description: 'Version to use.'

default: '10.x'

runs:

runs:
using: 'node12'

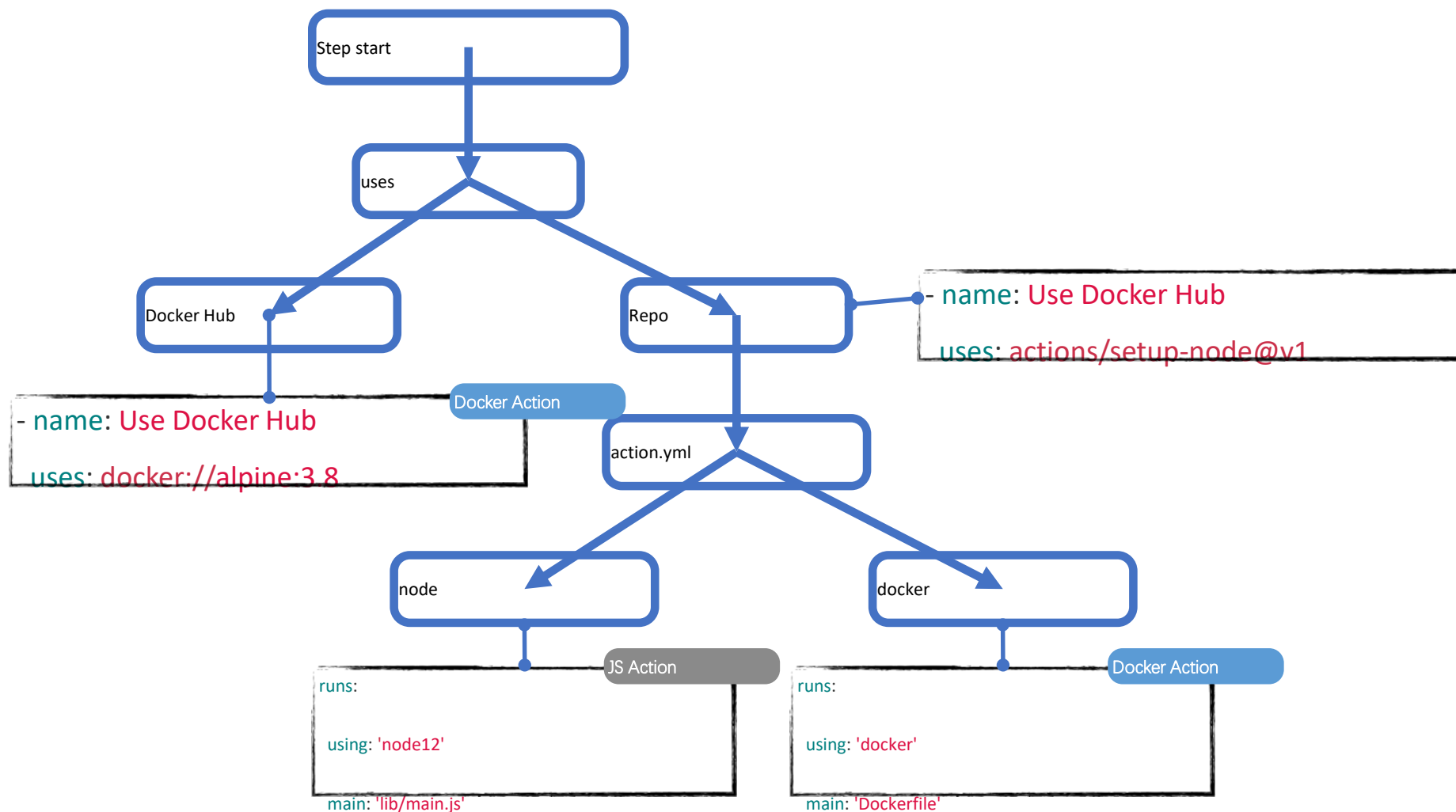
using: 'docker'
main: 'lib/setup-node.js'

main: 'Dockerfile'

全局概览

GitHub Actions

GitHub Actions Overview



Talk is Cheap

如何使用 GitHub Actions?

如何使用 JavaScript 开发一个 GitHub Action?

Talk is Cheap

1. 在 GitHub 上新建 Demo 项目

The screenshot shows a GitHub profile page for a user named Maple Miao (mapleeit). The profile includes a bio, a list of pinned repositories, a contribution graph for the last year, and a list of organizations the user is associated with.

Profile Information:

- Profile picture: A man with glasses and a white shirt.
- Username: mapleeit
- Developer Program Member
- Location: Shenzhen
- Company: Tencent

Pinned Repositories:

- 3rd-Eden/memcached**: A fully featured Memcached client built on top of Node.js. Built with scaling in mind so it will support Memcached clusters and consistent hashing. (JavaScript, 1.2k stars, 266 forks)
- form-data/form-data**: A module to create readable "multipart/form-data" streams. Can be used to submit forms and file uploads to other web applications. (JavaScript, 1.4k stars, 195 forks)

Contributions:

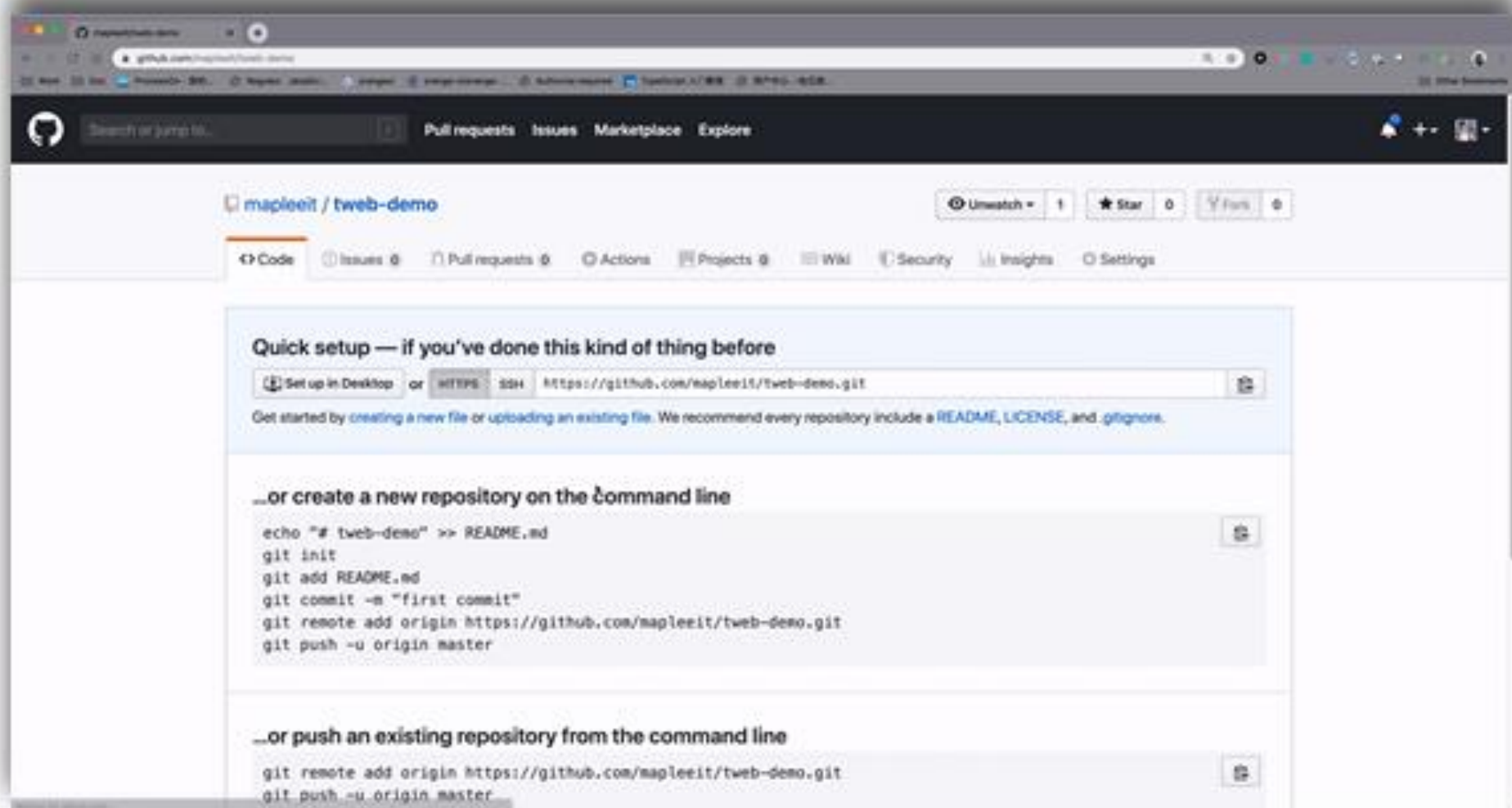
- 140 contributions in the last year
- Contribution graph showing activity from Nov to Oct.
- Contribution settings: 2019, 2018, 2017, 2016, 2015, 2014, 2013

Activity overview:

- 19% Code review

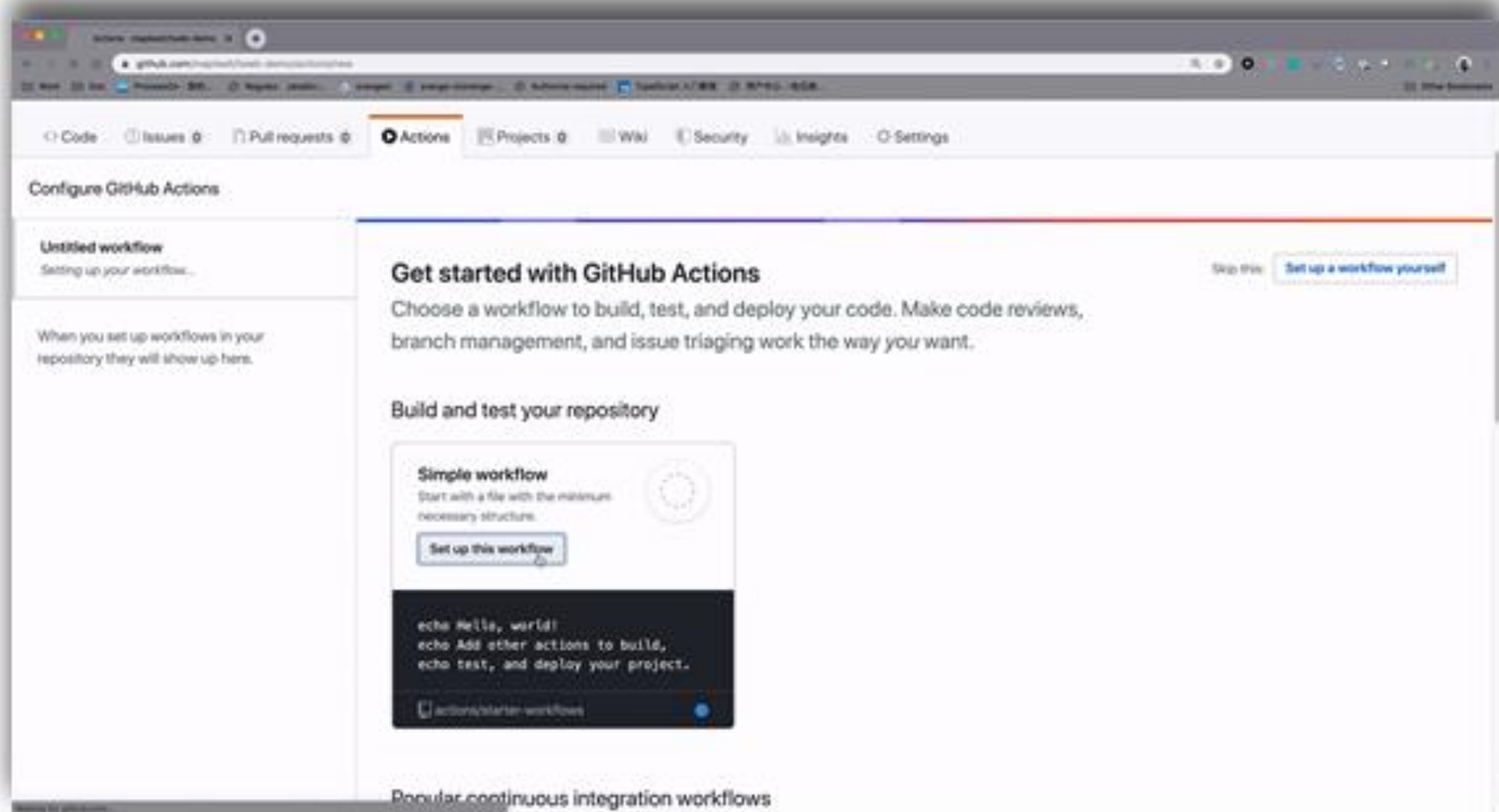
Talk is Cheap

2. 在该项目上新建一个 GitHub Actions Workflow



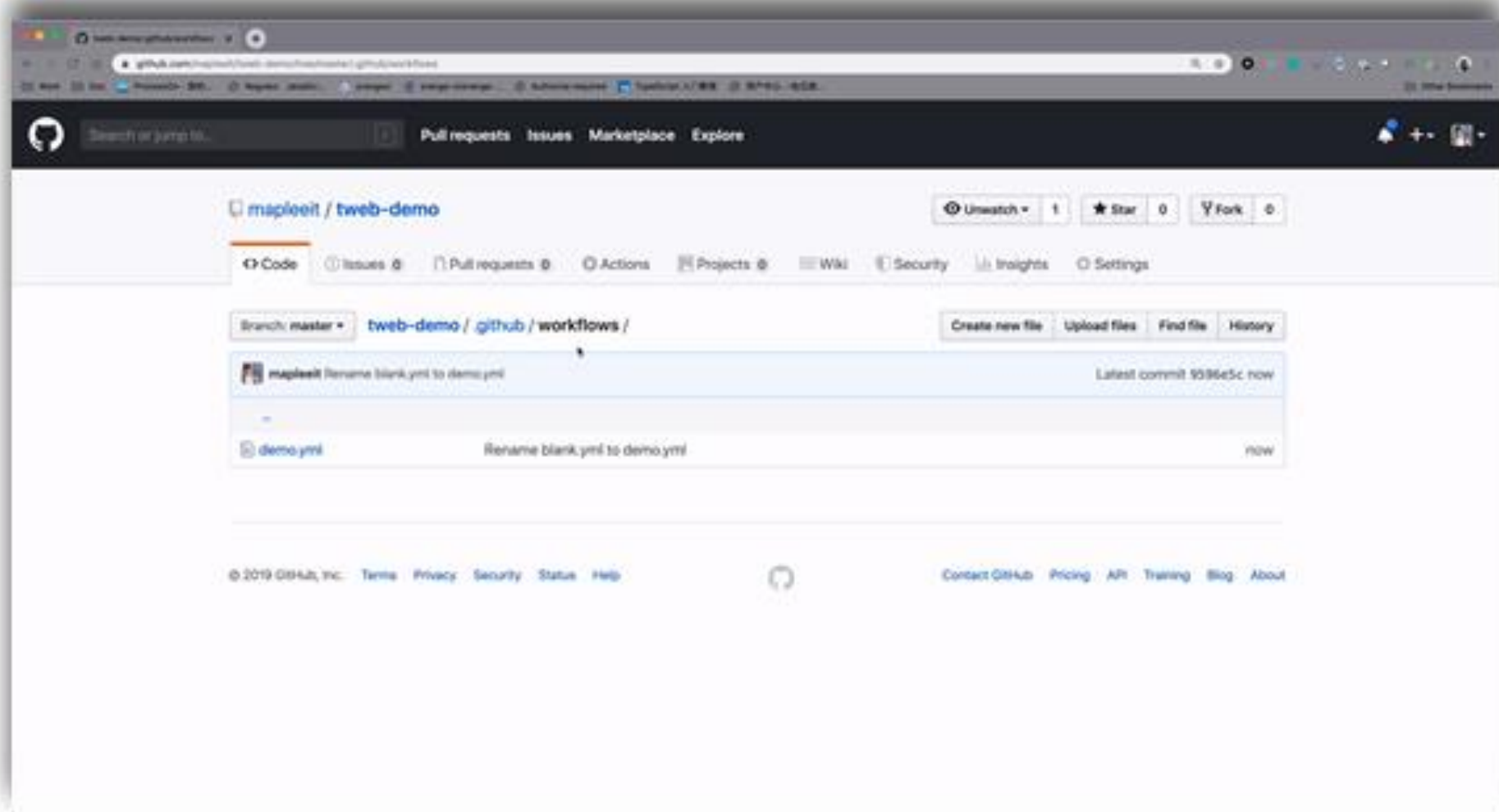
Talk is Cheap

3. 编辑该 GitHub Actions Workflow



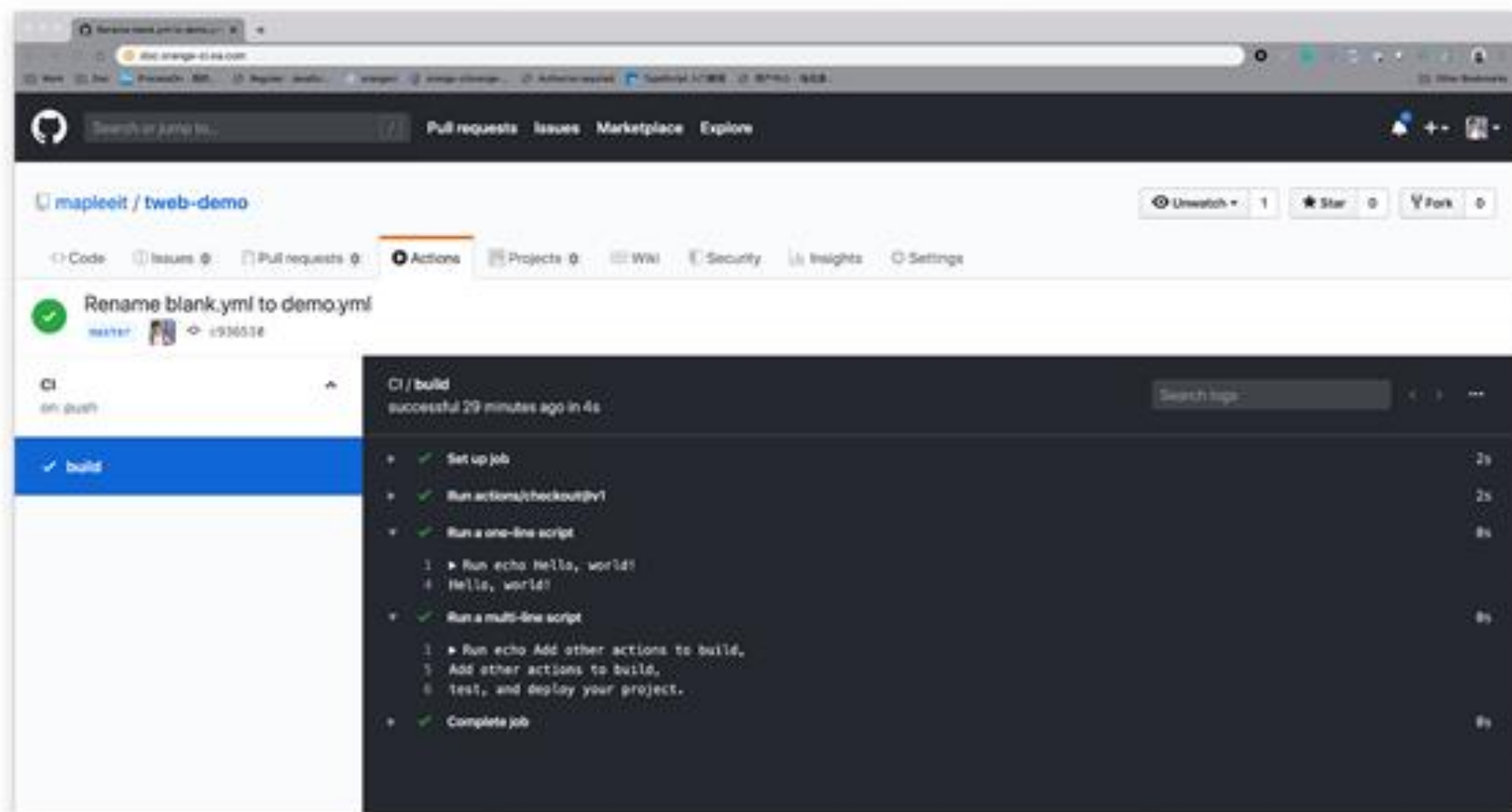
Talk is Cheap

4. 查看效果



Talk is Cheap

5. 等待一段时间后...

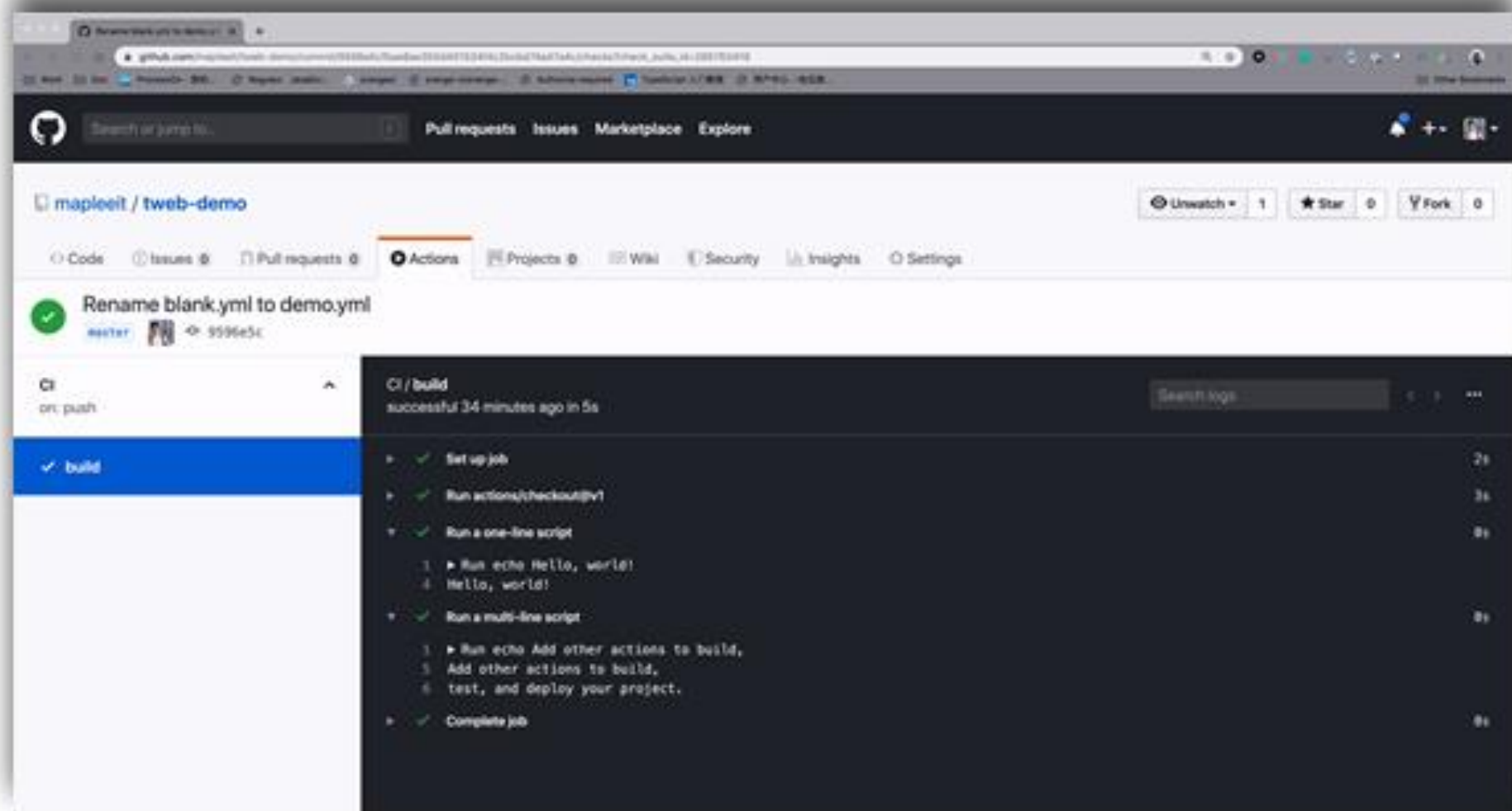


4 Talk is Cheap

写一个自己的 JavaScript Action 吧

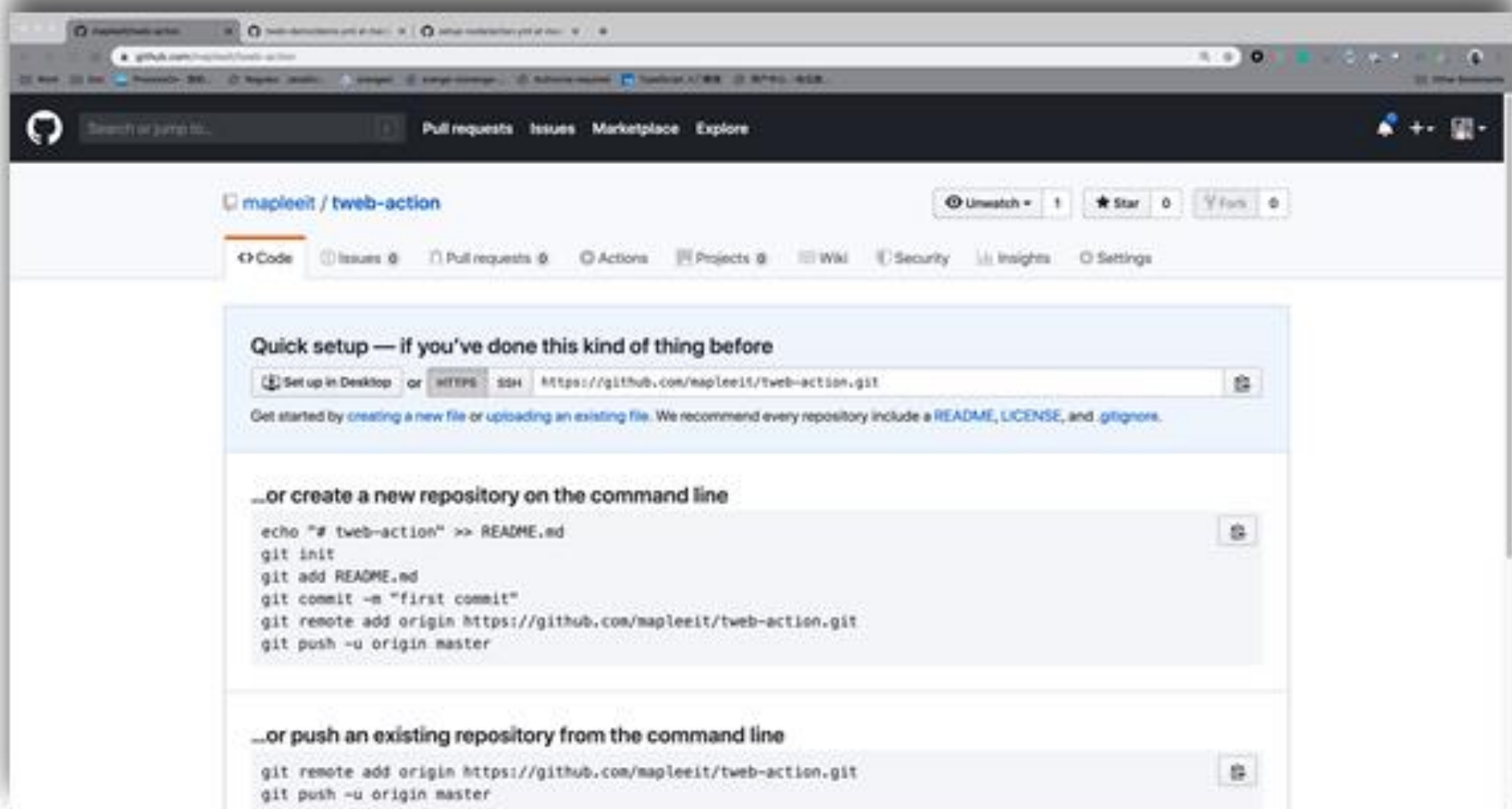
Talk is Cheap

1. 创建一个 tweb-action 的仓库



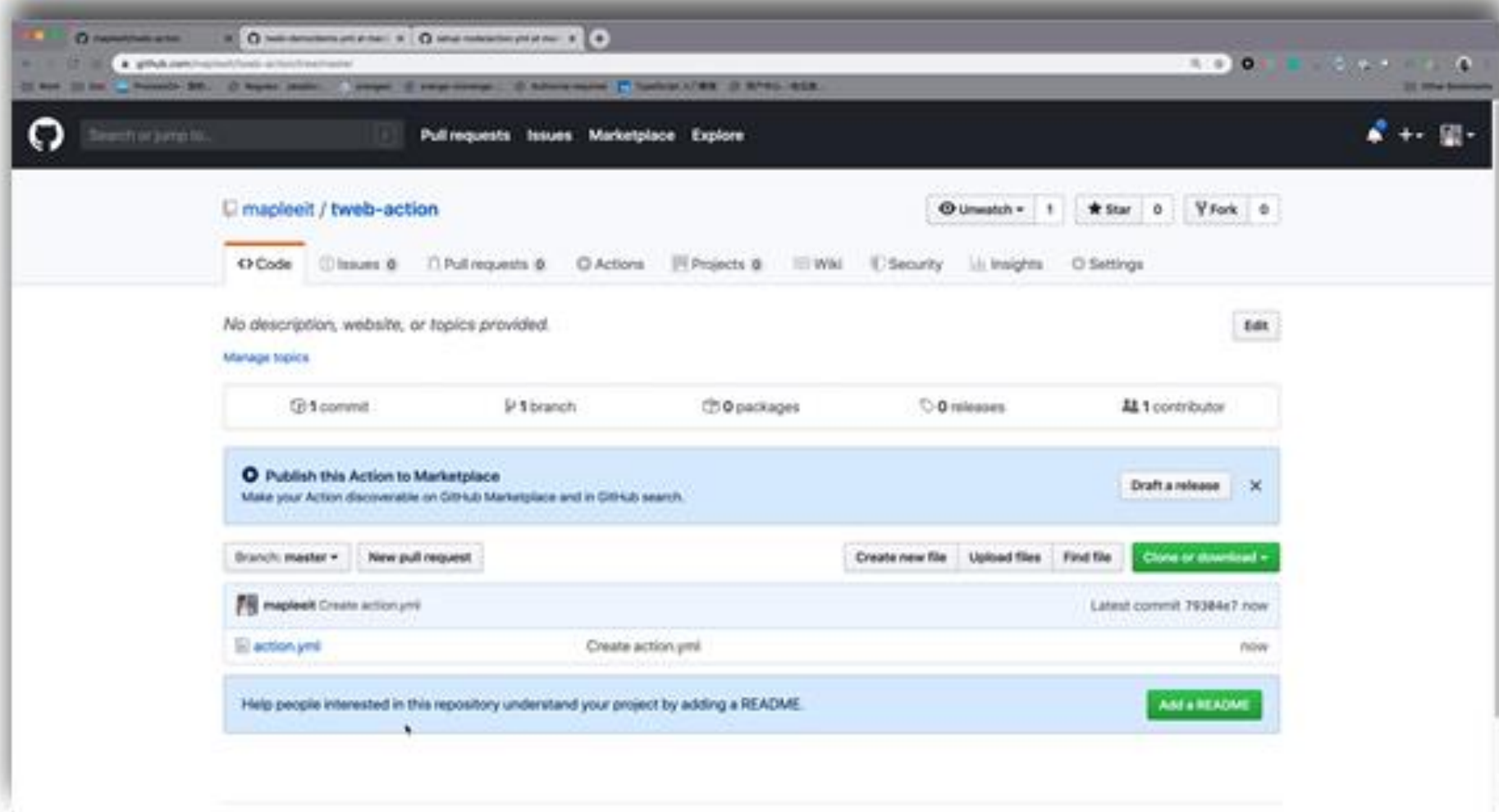
Talk is Cheap

2. 写 action.yml



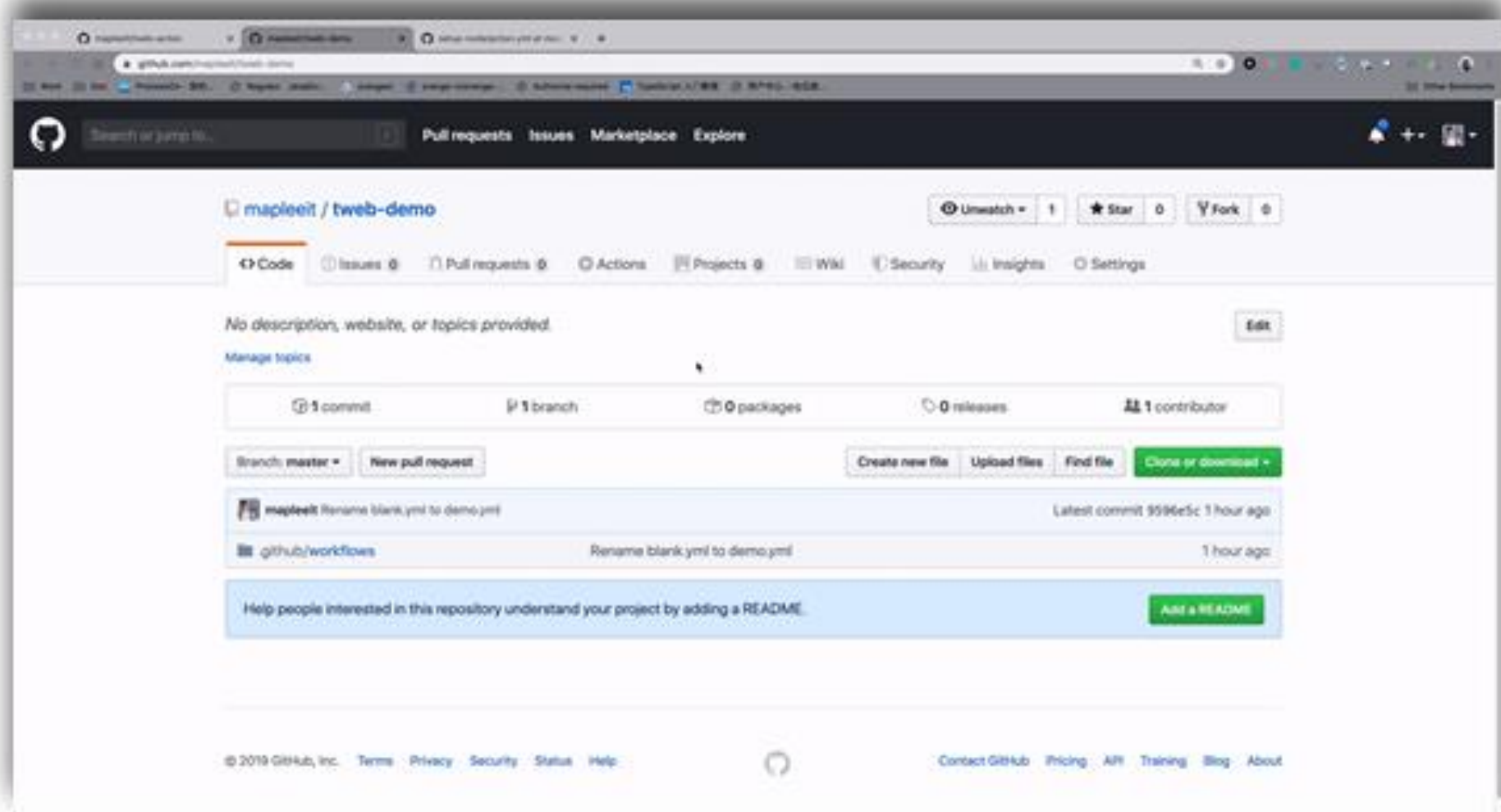
Talk is Cheap

3. 写 index.js



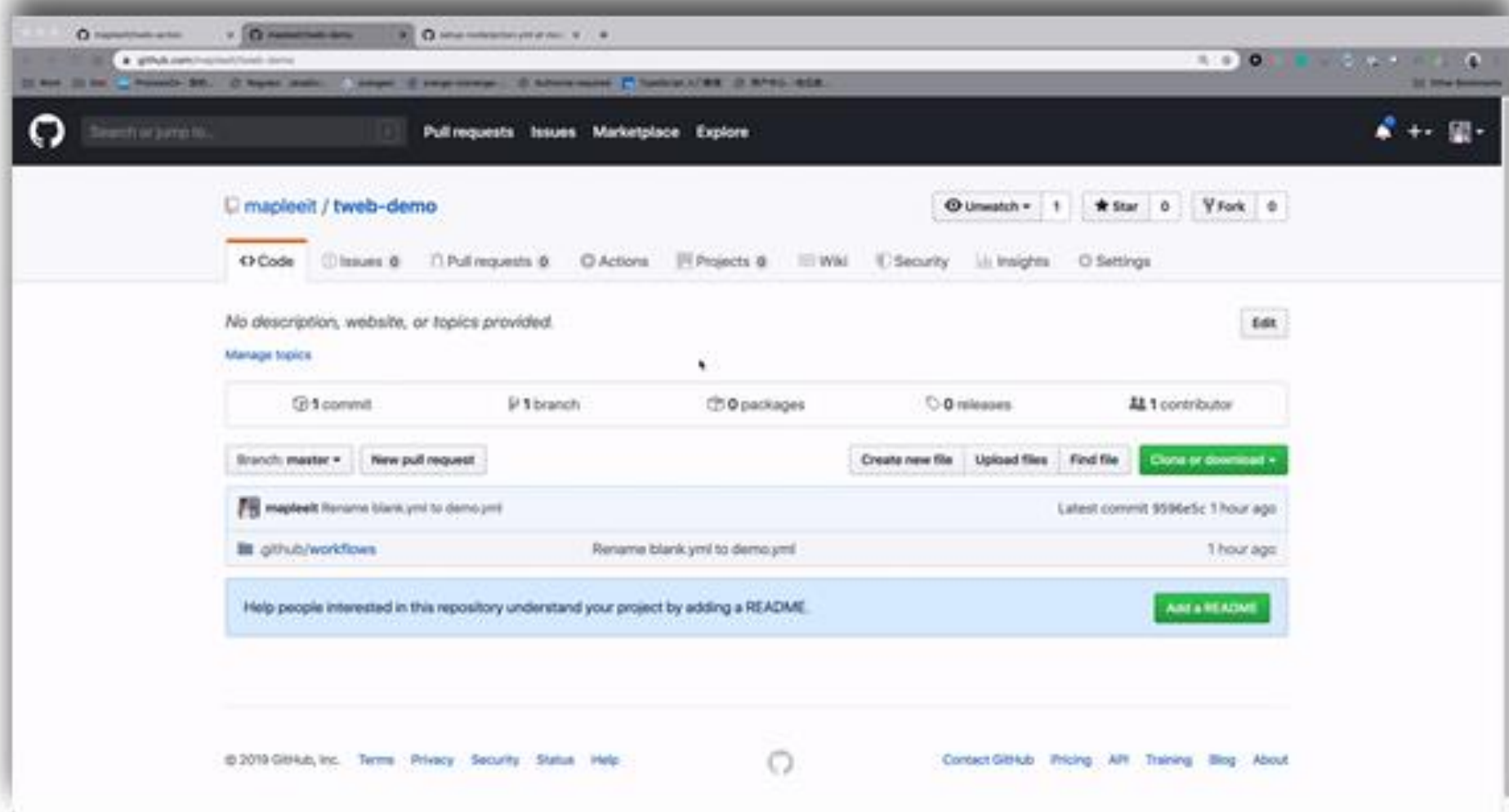
Talk is Cheap

4. 使用 my first action



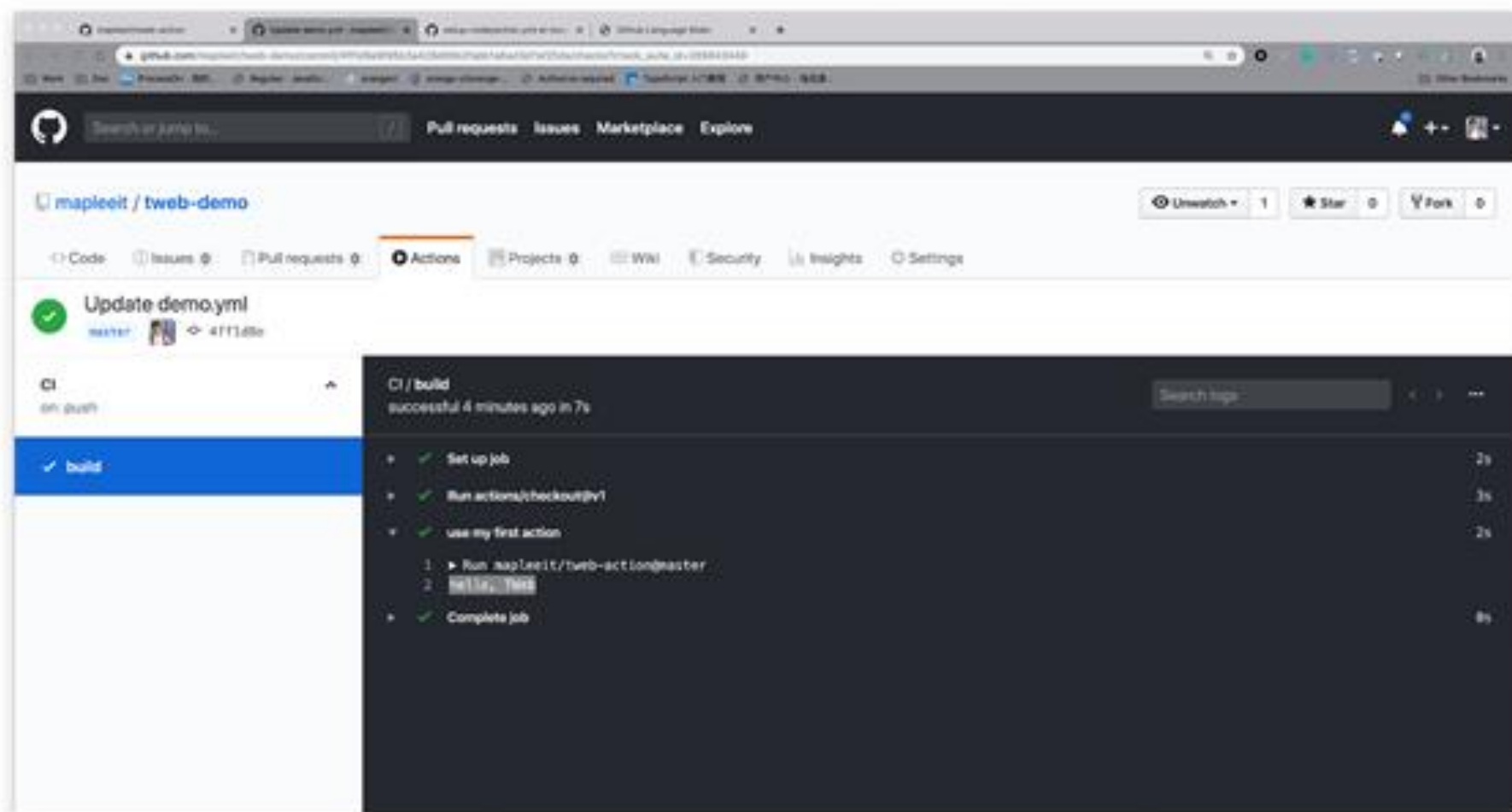
Talk is Cheap

4. 使用 my first action



Talk is Cheap

5. 大功告成!



拥抱 GitHub Actions

拥抱 GitHub Actions

GitHub Actions 目前可能存在的问题

- `node_modules` 需要提交代码库

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拥抱 GitHub Actions

GitHub Actions 的新想法

- GitHub Repo as Plugin, 更广泛的去中心化
- 拥抱 JS 生态



Q & A

mapleai@github
maplemiao@tencent.com

<Thanks/>

主办方
Organizer

Tencent TWeb