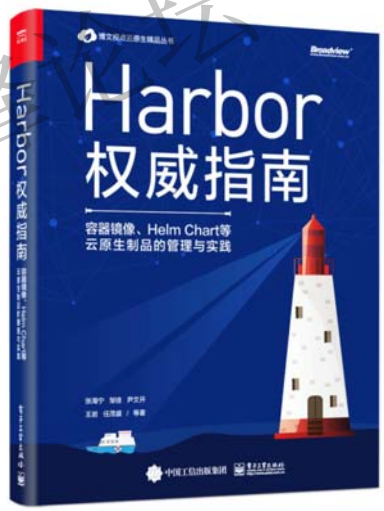
Building Cloud Native Ecosystem from Harbor

从Harbor开源项目构建云原生生态

Henry Zhang, VMware

About Me

- Technical Director, Cloud Native Lab, VMware China R&D
- Creator and maintainer of Harbor
- Former evangelist of Cloud Foundry China community
- Contributor of FATE/KubeFATE
- Coauthor of 《Harbor权威指南》
- Author of 亨利笔记 公众号
- Current interest: cloud native apps, AI/ML, blockchain etc.



亨利笔记 公众号

Harbor: Open Cloud Native Community

Harbor: 开放的云原生社区

VMware Open Innovation COE

Joint Innovation Projects with Community

Open Source

HARBOR
EDGEXFOUNDRY
FATE
Pivotal Greenplum
ANTREA
SINGLETON

Tech for Good

FLOWGATE
CLOUD tides

Open Source Code

CLOUD NATIVE COMPUTING FOUNDATION
THE LINUX FOUNDATION
THE APACHE SOFTWARE FOUNDATION 20TH ANNIVERSARY
LF EDGE
LF AI
LF NETWORKING

Open Cloud Services

Lenovo
Alibaba Cloud
CDS 首云 CAPITALONLINE
Tencent Cloud

Advanced Technology Labs

Cloud Native
Edge Computing
AI
Cloud Networking
Cloud Data
Cloud Globalization

Harbor: Trusted Cloud Native Artifact Registry

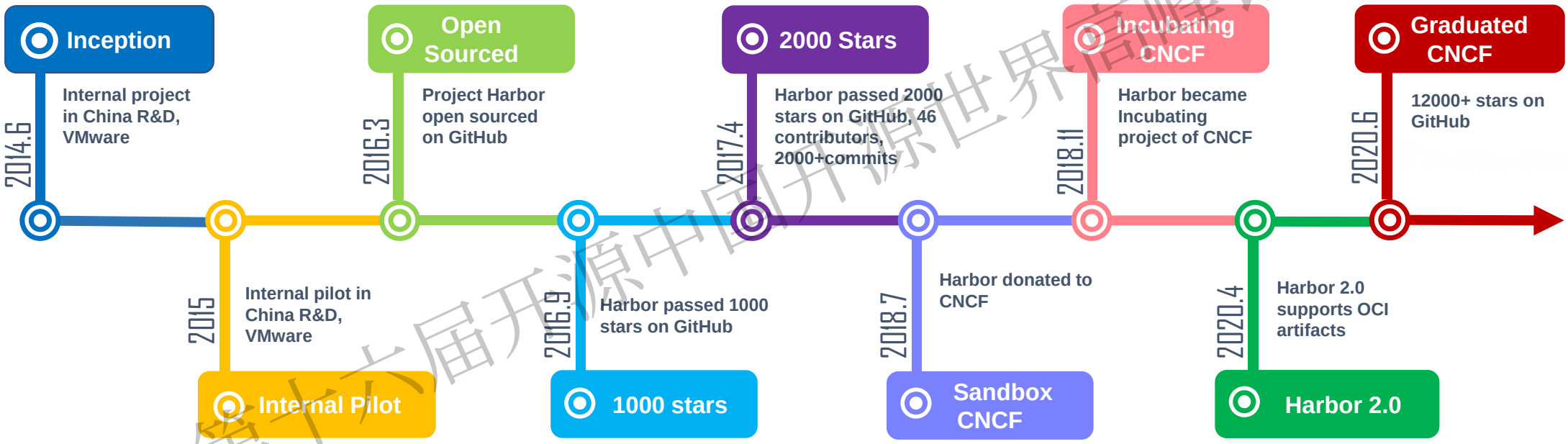
- First CNCF project originated from China
- First graduated CNCF project from China
- 47% production use in China

- 首个原创于中国的 CNCF 开源项目
- 中国首个毕业的 CNCF 开源项目
- 中国用户生产系统使用率：47%

https://www.cncf.io/blog/2021/04/28/cncf-cloud-native-survey-china-2020/

https://www.cncf.io/announcement/2020/06/23/cloud-native-computing-foundation-announces-harbor-graduation/

Harbor Timeline



Harbor Key Features

- Access control
  - RBAC, project isolation
- Management policy
  - Immutability, Quotas, Retention
- Artifact distribution
  - Replication, Proxy cache, P2P preheat
- Security & Compliance
  - Signing, Scanning, CVE allowlist
- Extensibility - Compatible with existing investments in infra & services
  - Integration with LDAP, OIDC provider for authentication
  - Webhook, Robot Accounts

Harbor Open Architecture

Harbor Ecosystem

HARBOR

- The first CNCF project originated from China
- Thousands of production users
- Work closely with developer and user community
  - ContainerHub, AliCloud, TensorSecurity, Loongson, Alauda

GitHub Star	Contributors
15K+	200+
Downloads	**Forks**
500K+	3.7K+

5000+ Users

腾讯云 | 京东 | 中国移动 China Mobile | 360 www.360.cn
National Commercial Bank Jamaica Limited | 网易轻舟 | TREND MICRO | SLAMTEC

20+ Product Partners

灵雀云 alauda.cn | CloudChef | LeanCloud | vmware
Pivotal | 时速云 | BingoCloud 品高云 | 焱融云 YAN RONG

Contributors

vmware | 灵雀云 alauda.cn | Hyland creator of OnBase | 腾讯云
网易轻舟 | adorsys | TVM 天脉 | APPRENDA

Global Community

GitHub Stars	Committers	Contributing Companies	Contributors	Forks
15K+	200+	50+	3000+	4000+

Commits	GitHub Views/Visitors	Downloads
12K+	61K+/13K+	10K+

12 Maintainers across 5 companies

Harbor Community

data source: https://harbor.devstats.cncf.io/ & https://github.com/goharbor/harbor/graphs/traffic (till 2021/03/17)

Community Engagement

- Co-innovate with partners in ecosystem:
  Tencent Cloud, Alauda, AliCloud, Netease Qingzhou, Huawei, LoongSon …

- Establish workgroups together with community to focus on different areas

  - Multi-Arch workgroup
  - Performance workgroup
  - Image-Accelerator workgroup
  - P2P workgroup
  - Scanning workgroup
  - Operator workgroup
  - Replication workgroup

Levels of Participation

End User

- GitHub Issues
- Experiences Sharing
- Community Meetings

Contributor

- 1st Commit (Contributing Guide)
- Fix Bugs
- Proposal (Governance Model)
- Community Meetings

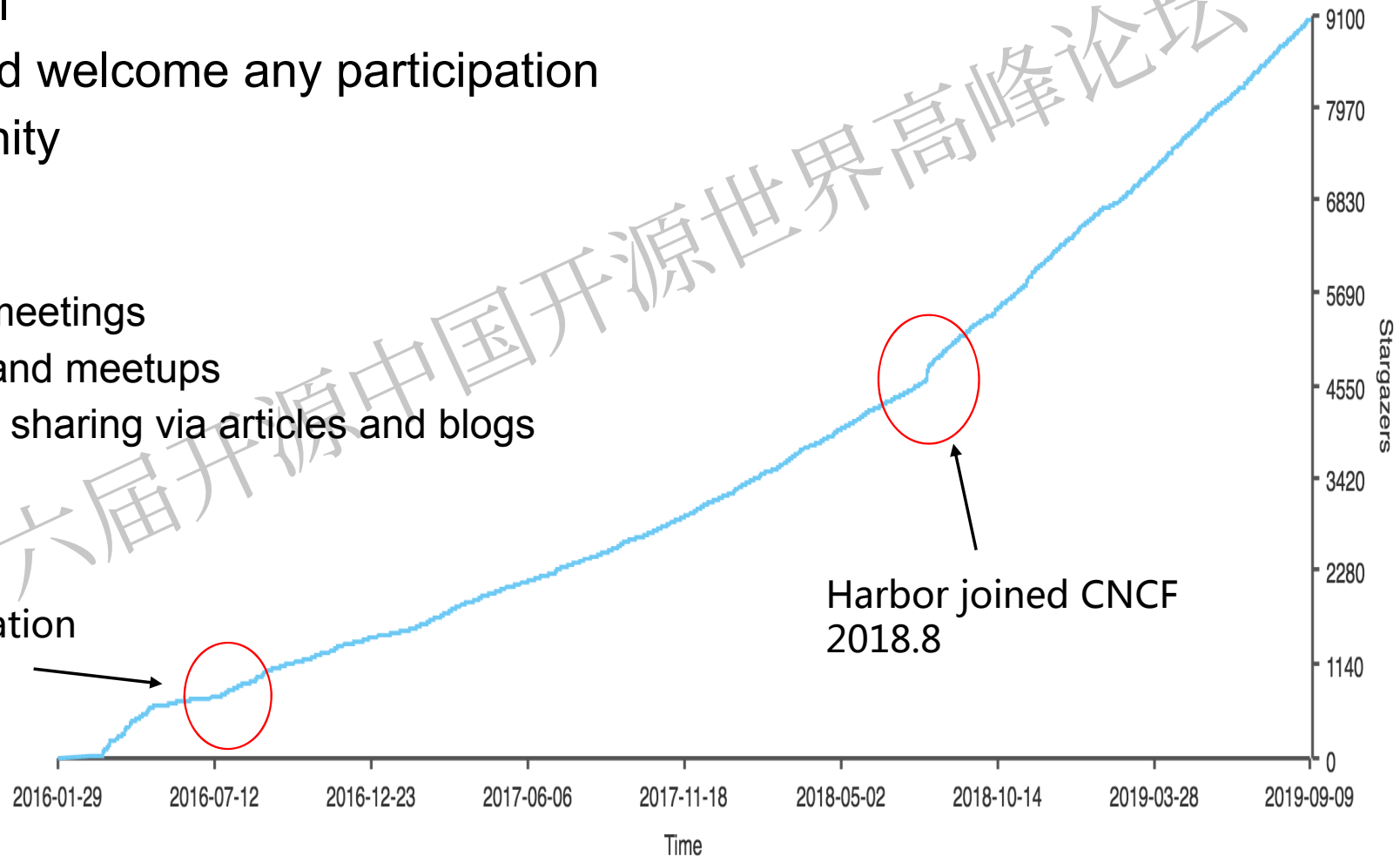
Maintainer

Governance Model

- Commits
- Reviews
- Release Plans
- Presentations
- Host Meetings

Open is the Key

- Vendor neutral
- Encourage and welcome any participation
- Open community
  - Workgroups
  - Social media
  - Community meetings
  - Conference and meetups
  - Best practice sharing via articles and blogs



Expanding beyond the boundaries

拓展开源项目的边界

FATE : Federated AI Technology Enabler

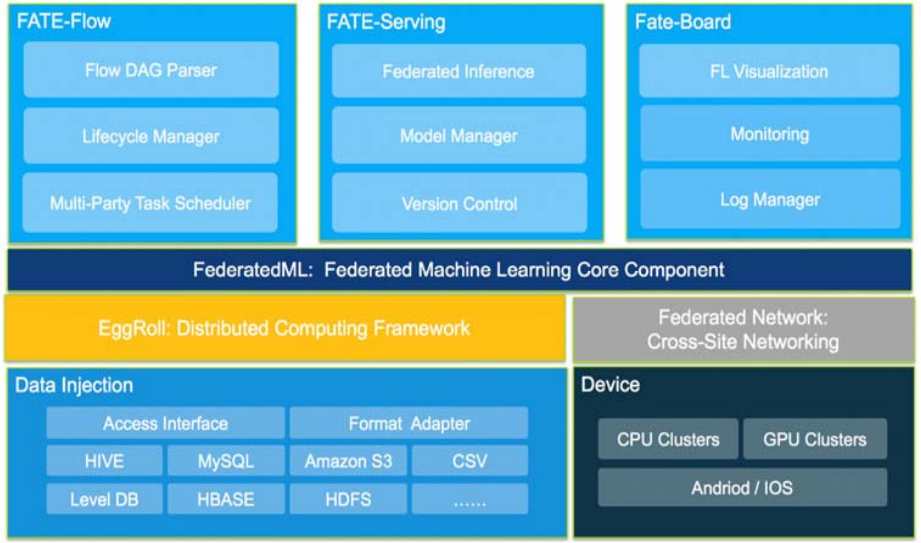
The world's first industrial-level **federated machine learning** open source framework.

- Distributed security computing framework based on data privacy protection
- High-performance secure computing support for machine learning algorithms
- Both vertical and horizontal federated learning

Background

– Initiated by WeBank
– Donated to Linux Foundation in June 2019
– https://github.com/FederatedAI/FATE

FATE LINUX FOUNDATION



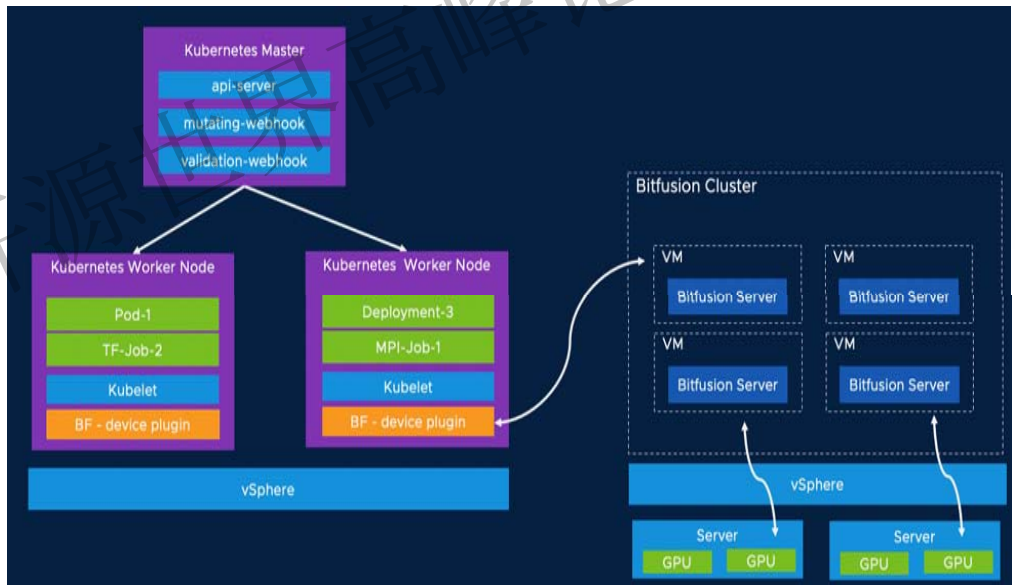
VMware’s Contribution to FATE

- TSC member of FederatedAI, under Linux Foundation
- Key contributor to cloud native federated learning: FATE, KubeFATE
  - 5 contributors
  - 300+ commits
  - 10+ releases
- Contribution to Kubeflow project: FATE-Operator
- Active participation in FL community & evangelism:
  - Meetups
  - CCF Tech Forum
  - Academic and industry conferences

Cloud Native GPU Sharing

- A device plugin of Kubernetes for Bitfusion GPU resources.
- BF GPU resources is consumed via Kubernetes' native approach.
- Transparent GPU allocation to developers.
- GPU quota can be enforced for namespace.
- Open source project:

https://github.com/vmware/bitfusion-with-kubernetes-integration



Summary

- Open source is more than sharing your code
- Everything is open
  - Technologies
  - Involvement
  - Community
  - Cooperation
  - Globalization
- Pushing limits by cross-project collaboration

Harbor公众号

VMware 中国研发中心公众号