



# HYPERLEDGER

BLOCKCHAIN TECHNOLOGIES FOR BUSINESS

# Hyperledger Cello

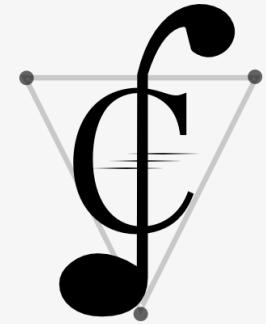
## Overview and Roadmap

Baohua Yang, Chang Chen, Haitao Yue

June 19, 2017

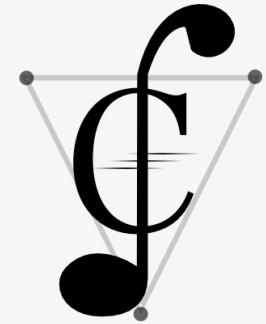
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- What
- Key features
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# What is Cello

## Blockchain Service Provision and Operation

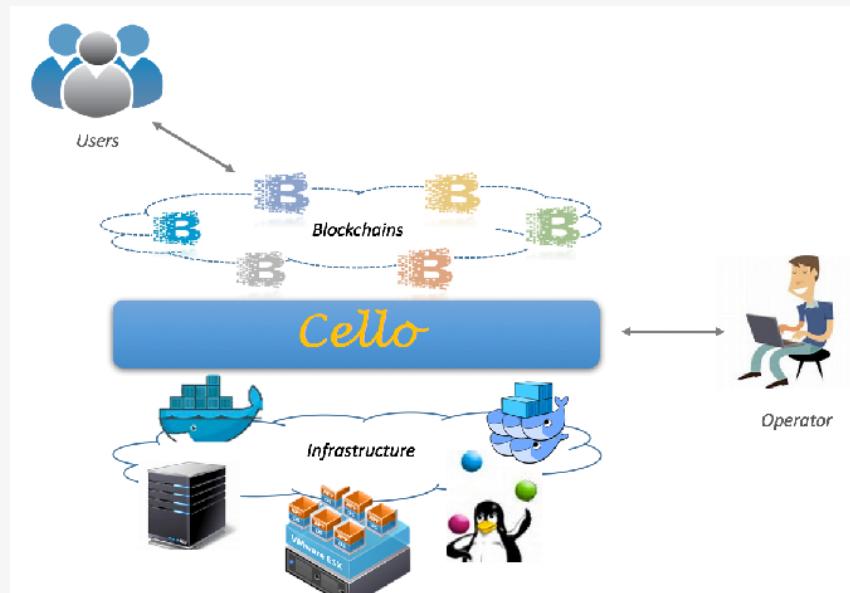
- Meet challenges to deploy blockchain networks
- Feel difficult to manage a running blockchain
- Hope to monitor/analyze what happens inside the blockchain
- Wanna focus on app development, no care of chain operation



# What is Cello

## Cello offers

- Quickly manage multiple blockchain instances with simple clicks
- Schedule resources among various resource pools
- Monitor chain health status automatically
- Analyze the running status/log/data for chains



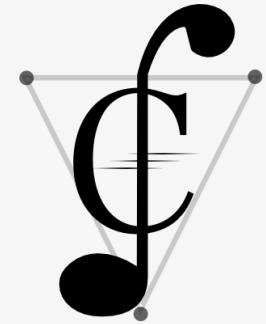
# What is Cello

## Brief History

- Accepted as a Hyperledger project at Jan, 2017
- Supported and contributed by committers from IBM, Intel, Soramitsu, Huawei, Cloudsoft
- 300+ commits
- Python, Javascript

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# Key features

## Manage the lifecycle of blockchains

- Create
- Config
- Use
- Health check
- Delete

Cello Dashboard

Overview System Status Hosts Active Chains

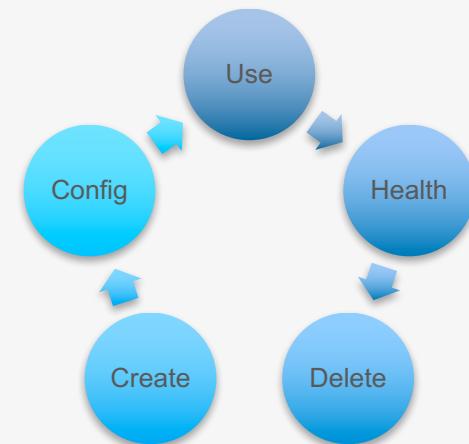
Inused Chains Release History About

Chains active: 15

Name	Type	Status	Health	Size	Host	Actions
compute3_0	noops	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Actions"/> ▶ Start ■ Stop ○ Restart ☒ Delete ○ Release
compute3_1	p2p/batch	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_2	p2p/batch	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_3	p2p/batch	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_4	noops	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_5	p2p/batch	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_6	noops	running	OK	6	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_7	p2p/batch	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_8	p2p/batch	running		4	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>
compute3_9	p2p/batch	running	OK	4	582d7ec2f113a90255082ded	<input type="button" value="Actions"/>

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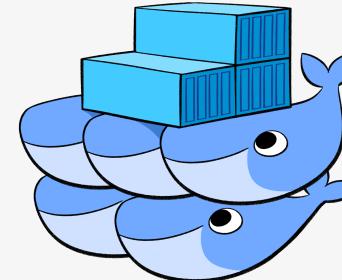
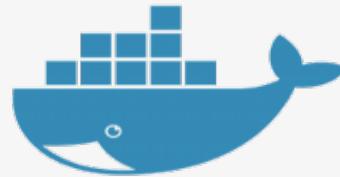
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# Key features

Support Various Infrastructure as the Resource Pool

- Docker Host
- Docker Swarm
- Kubernetes (under development)
- And More in Future

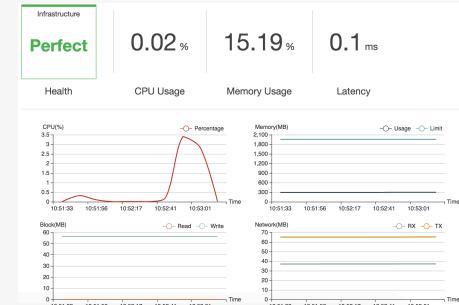
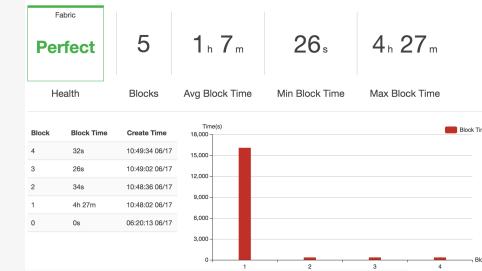
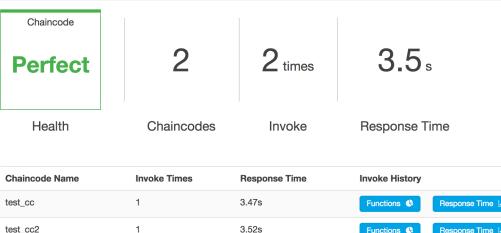
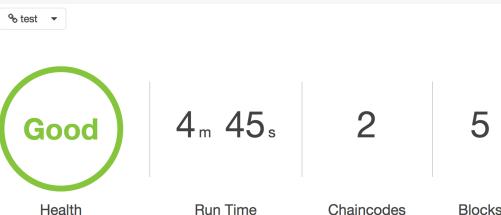


kubernetes

# Key features

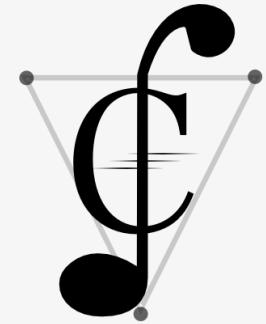
## Support Monitor & Analysis

- Chain Status
- System Utilization
- Network Latency
- Log messages
- Chaincode Operation Analysis



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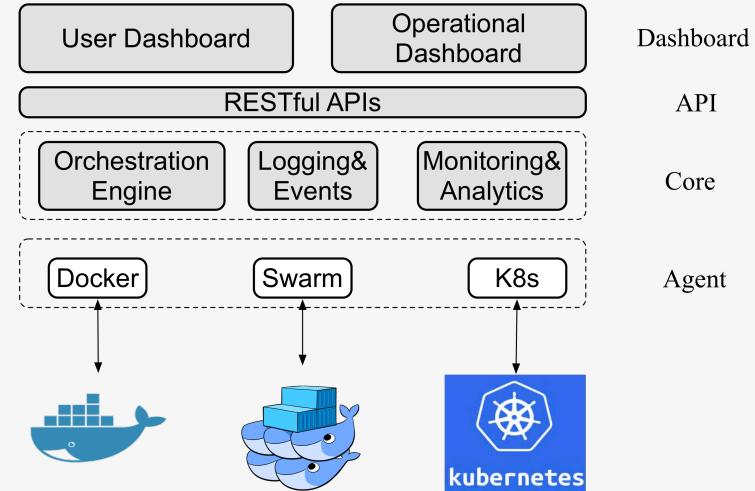
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# Architecture and Design

## 4 Layers

- Dashboard: Web frontend
- API: RESTful APIs
- Core: Orchestration implementation
- Agent: Drivers for various infrastructures



# Architecture and Design

## Dashboard layer

- Basic theme and React theme
- User dashboard
- Operational dashboard
- HTML+CSS+JavaScript

Celio Dashboard

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# Architecture and Design

## API layer

- Use Flask as the lightweight API framework
- Cluster APIs: apply, release, start, stop, restart, list
- Host APIs: create, delete, fillup

# Architecture and Design

## Core layer

- Orchestrate the blockchain in the resource pool
- Collect log, event, running status data
- Cello-analytics will do analytics on the data

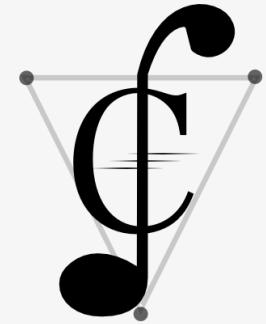
# Architecture and Design

## Agent layer

- In Cello, each type of resource cluster is a “Host”
- Docker/Swarm: Employ standard Docker API
- Kubernetes: Employ Kubernetes API

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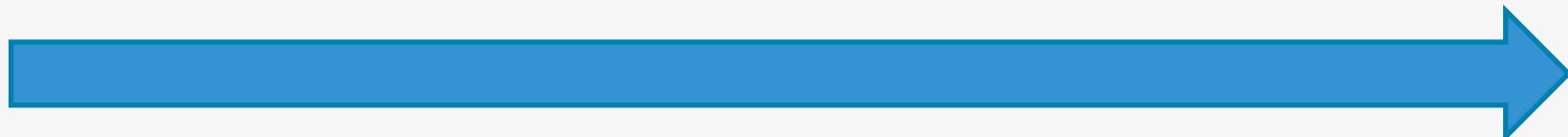
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# Roadmap

Support Fabric v0.6  
Support Docker Host  
Support Swarm  
Operational Dashboard  
System Monitoring

Support Fabric v1.0  
Support Kubernetes  
User Dashboard  
Advanced Scheduling  
Log Analytics  
More Blockchain Types

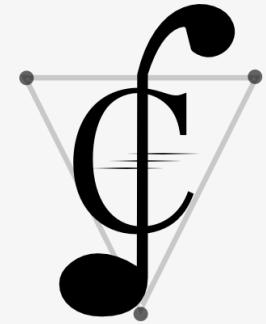


June 2017

Dec 2017

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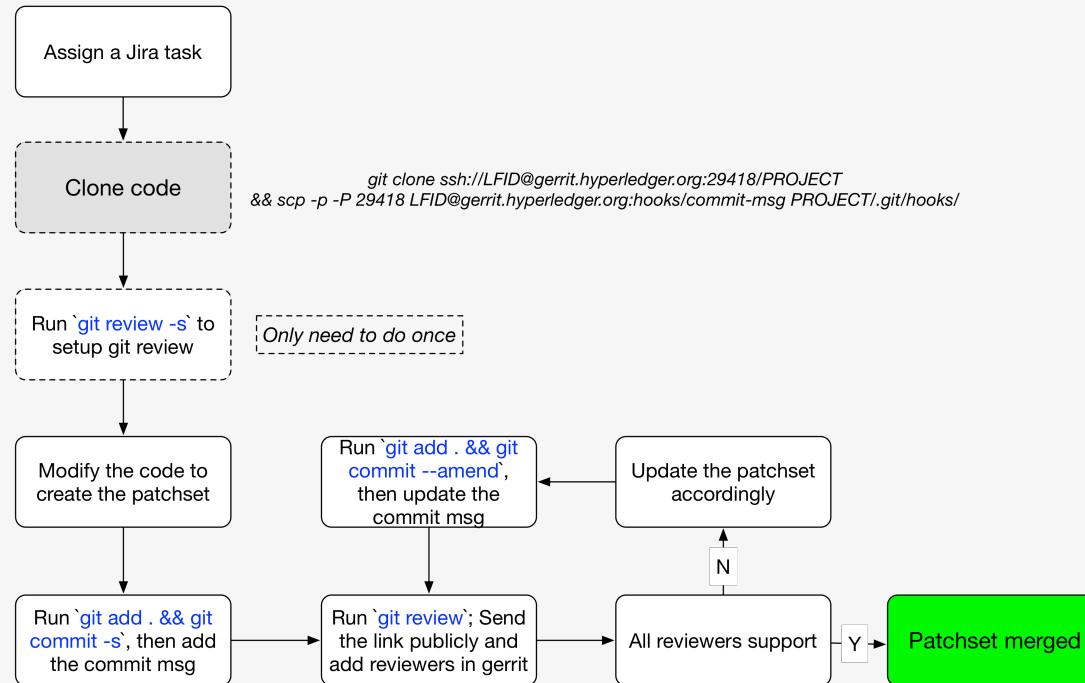


# How to contribute

## Process

- Assign a task from Jira
- Clone the code and create a new branch naming with the task ID
- Create patchsets, git commit and git review
- Send patchset link to rocketchat or mail-list for review

# How to contribute



# How to Contribute

## Sponsors & Contributors

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# How to contribute

## Useful channels

- Wiki: <https://wiki.hyperledger.org/projects/cello>
- Mail-list: [hyperledger-cello@lists.hyperledger.org](mailto:hyperledger-cello@lists.hyperledger.org)
- RocketChat: <https://chat.hyperledger.org/channel/cello>
- Jira Task Board: <https://jira.hyperledger.org/projects/CE>
- Gerrit: <https://gerrit.hyperledger.org/r/#/admin/projects/cello>



# Question?

