



Hyperledger Mentorship Project Presentation

November 2020

Dixing Xu

Hyperledger Cello



› Introduction

- › **Name:** Dixing Xu 許迪星
- › **Location:** Previously in mainland China, now in Hong Kong
- › **University:** Xi'an Jiaotong-Liverpool University/Hong Kong Baptist University
- › **Mentor(s):** Dr. Baohua Yang (Oracle), Tong Li (IBM)
- › **Hyperledger Project:** Hyperledger Cello – Operate and Govern Blockchain Networks in Decentralized Way



› Project Description:

- › Cello is a blockchain provision and operation system, which helps manage blockchain networks in an efficient way
- › The project aims to design and implement a practical operational system equipping with decentralized functionalities based on Hyperledger Cello code base



› Project Objectives:

- › Obj 1: Documentation for new governing module (in a decentralized way)
- › Obj 2: Implementation the new governing module (in a decentralized way)



› Project Deliverables:

- › Deliverable 1: Documentation for API-Engine
- › Deliverable 2: Development of API Engines
- › Deliverable 3: User dashboard RESTful APIs



› Project Execution & Accomplishments:

- › Get familiar with Django/Flask framework
- › Develop the docker-based agent
- › Revise the agent according to mentor's suggestions
- › Evaluate the API-engine code and decide how to leverage it



› Design Documentation (API for User Dashboard)

› Users(GET /api/v1/)

Method	Function	Parameter	Response
POST users	Create a new user	Json body of a user definition	status
GET user/xxxxx	Get the information of a user	N/A	User information
POST user/xxxx	Update the information of a user	Json body of a user definition	status
DELETE user/xxxx	Delete a user	N/A	status

Network

Method	Function	Parameter	Response
POST networks	Create a new network	Json body of a network definition	Network information
GET network/xxx xx	Get the information of a network	N/A	Network information

Node

Method	Function	Parameter	Response
POST nodes	Create a new node	Json body of a node definition	Node information
GET node/xxxxx	Get the information of a node	N/A	Node information

> Demo

Init.sh script will read the data from env variables and store into \$FABRIC_CFG_PATH.

- HLF_NODE_MSP: store a base64 encoded zipped "msp" path;
- HLF_NODE_TLS: store a base64 encoded zipped "tls" path;
- HLF_NODE_BOOTSTRAP_BLOCK: store a base64 encoded zipped bootstrap block;
- HLF_NODE_PEER_CONFIG: store a base64 encoded zipped peer configuration file (core.yaml);
- HLF_NODE_ORDERER_CONFIG: store a base64 encoded zipped orderer configuration file (orderer.yaml).

tmux

```
(hlf)
# dex @ garage in ~/hyperledger/cello/src/agent/docker-rest-agent on git:wip-docker-rest-api x [20:42:39]
$

(hlf)
# dex @ garage in ~/hyperledger/cello/src/agent/docker-rest-agent/intergration-test on git:wip-docker-rest-api x [20:42:37]
$
```

› Recommendations for future work:

- › We can support more agents such as Ansible-based, or Kubernetes-based, etc.
- › Revise documentation on API-engine APIs
- › Better UI for user dashboards



› Project Output or Results:

- › Code is available at: <https://github.com/hyperledger/cello/tree/master/src/agent>
- › API specification for userdashboard at:
<https://docs.google.com/document/d/129uzVcBzPspgNG7M1yaWMyJJ7Rz3YReScsNP2KYy568/>
- › Cello revised documentation:
<https://docs.google.com/document/d/1Dw6cEKaul6FenORNkDcxvPDDKwpl0A5EmcJBlqAWJoU/>



Hyperledger Cello



› Insights Gained:

- › Communication
- › Programming Skills

› Take Aways:

- › Documentation is important!
- › Have a try! Start programming!



The image shows a large audience seated in a conference room, facing a stage where a speaker is visible. The scene is overlaid with a blue geometric pattern of lines and dots. The text "THANK YOU!" is prominently displayed in the center.

THANK YOU!